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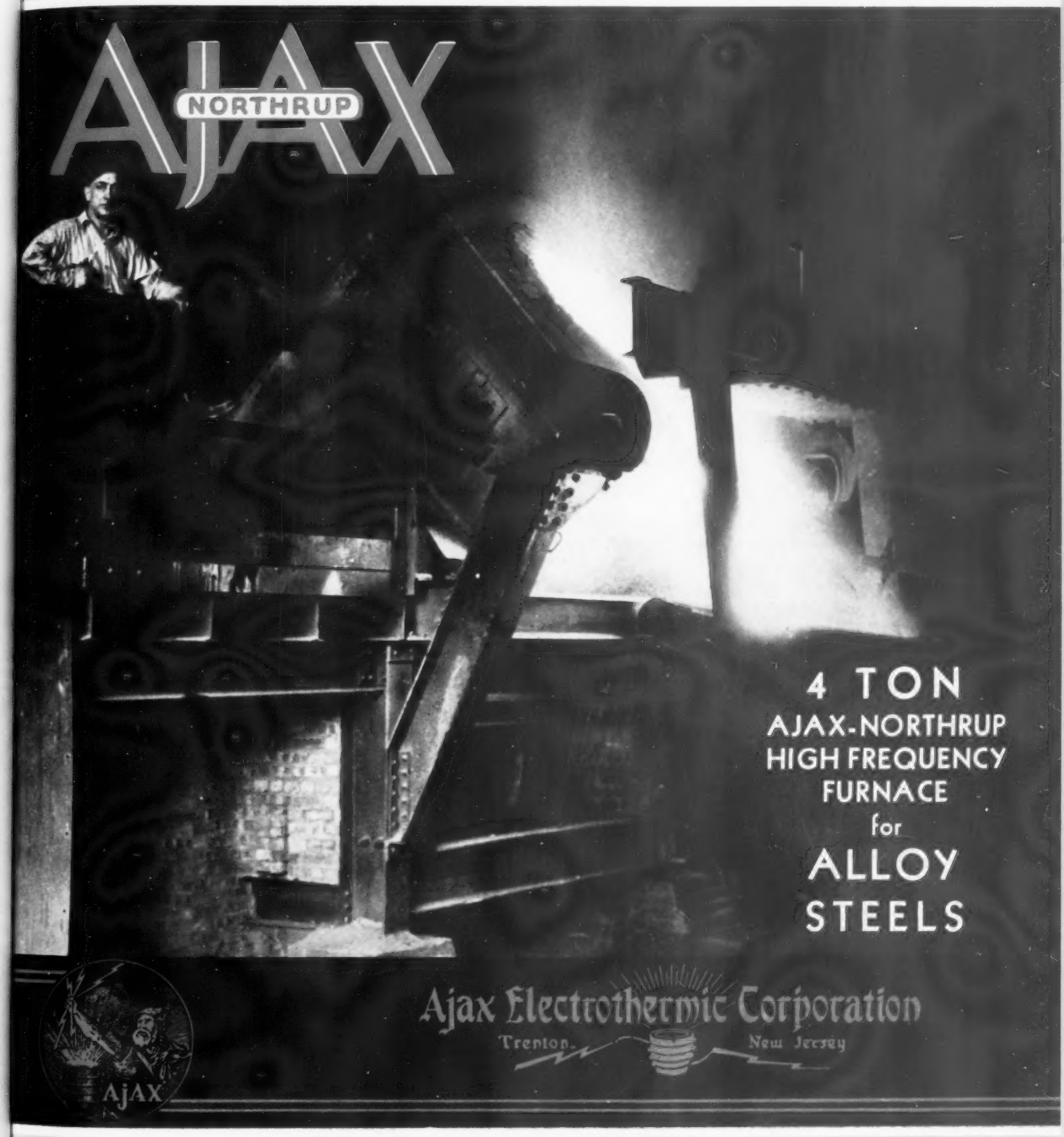
STEEL

PRODUCTION • PROCESSING • DISTRIBUTION • USE

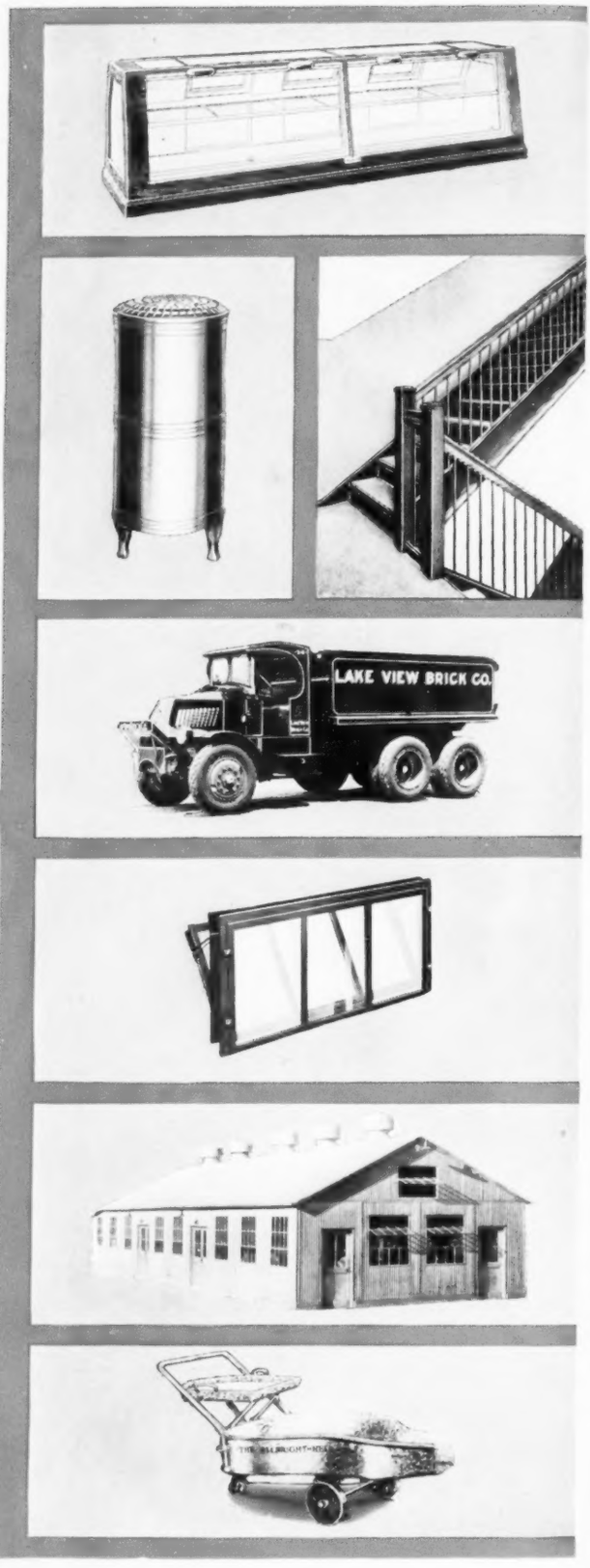
For forty-eight years—IRON TRADE REVIEW



September 26, 1932

Products improved for practically nothing

INLAND COPPER ALLOY STEEL



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Sheets Strip Plates Bands Structurals Piling

Rails Track Accessories Bars Rivets Billets

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STEEL

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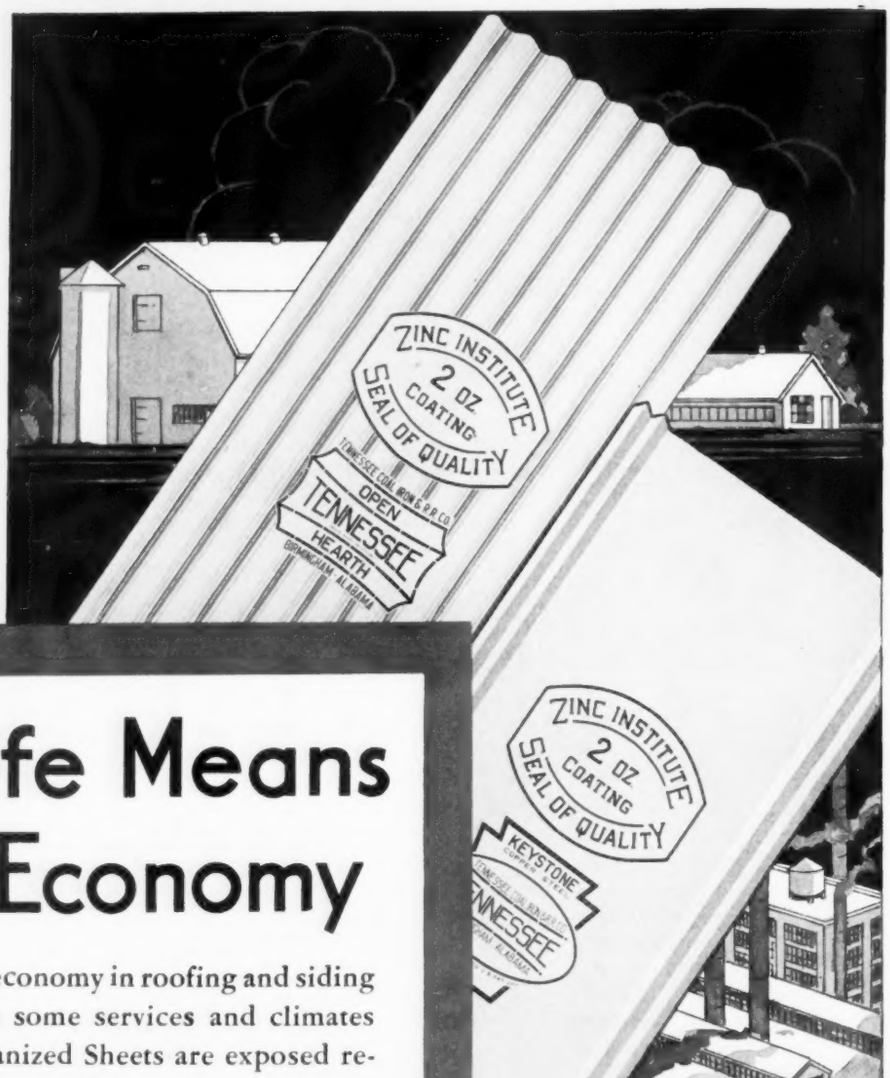
Heavy-Coated Galvanized



Longer Life Means Greater Economy

That longer life means greater economy in roofing and siding is an unquestioned fact and in some services and climates to which standard coated Galvanized Sheets are exposed replacement costs are such that the need for a heavier coated, more durably protected product is clearly evident. Tennessee is now meeting this need with Tennessee Heavy-Coated Galvanized Sheets—Corrugated and V-Crimped—carrying two full ounces of pure zinc to the square foot and bearing the American Zinc Institute's "Seal of Quality". These sheets carry also the established marks of Tennessee manufacture, resulting in a double guarantee of excellence.

If your requirements dictate the use of a really superior roofing or siding material, specify Tennessee Heavy-Coated Galvanized Sheets—available in No. 28 gauge and heavier.

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US STEEL

TENNESSEE SHEETS

Volume 91 Number 13

STEEL

For forty-eight Years—IRON TRADE REVIEW

PRODUCTION • PROCESSING • DISTRIBUTION • USE

The Week in Perspective

THERE will be no "forgotten man" at the National Metal congress and exposition at Buffalo next week (pp. 61-84). Somewhere the orbit of every visitor will be touched by the 8-ring technical circus of the American Society for Steel Treating, American Welding society, American Drop Forging institute, Wire association and four divisions of the American Society of Mechanical Engineers, Society of Automotive Engineers and American Institute of Mining and Metallurgical Engineers. Eighty-five papers and 110 exhibits are calculated to arouse high interests.

Quality, Not Quantity, New Goal for Steel

Improved materials and practice are the objectives of this mass attack upon the technical mind, varying only in approach from the work of the Alloys of Iron Research of the Engineering Foundation. Midstream in a 5-year program, the research committee concludes (p. 11) that demand for "cheap steel' is levelling off, points to a vast untouched market for high grade alloys, urges emphasis upon quality instead of quantity. Judging from their support of this research, steel producers are receptive.

Alloys Head Up Carnegie Program

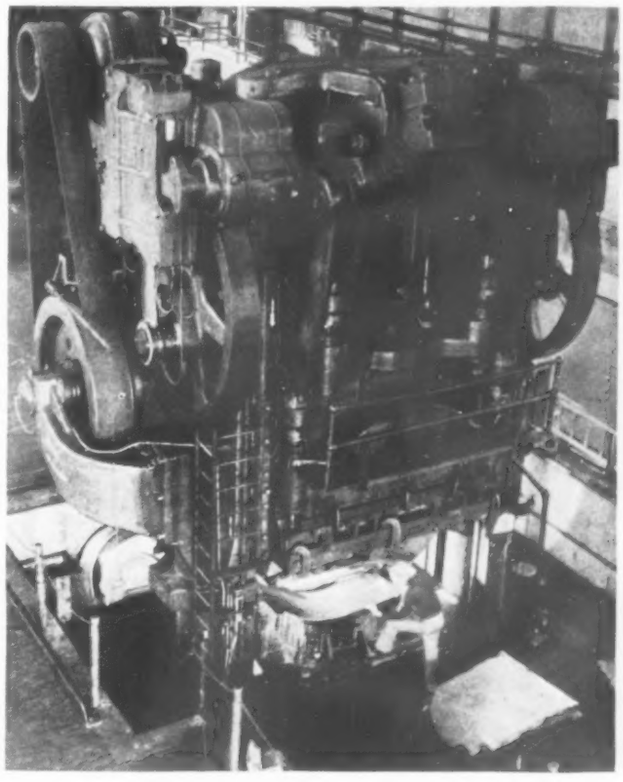
Reports on studies of iron, manganese and carbon alloys will dominate the sixth annual open meeting of the metallurgical advisory board of the Carnegie Institute of Technology at Pittsburgh, Oct. 28, revealing another facet of the alloy situation (p. 25). Deoxidation of steel with manganese-aluminum-silicon alloys will also be discussed . . . . Alloys will be represented at the new products conference being arranged (p. 28) for Sept. 27-29 by the Cleveland Engineering society.

Magnetic Uncoiler Boon for Strip Mills

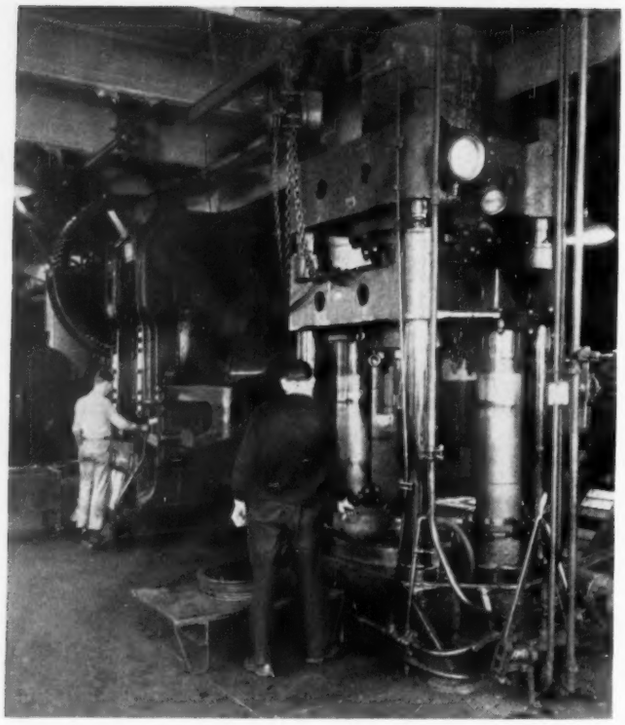
Typical of improved practice which the iron and steel industry is pursuing is a magnetic type of uncoiler for cold-rolled strip mills (p. 25), developed by a Pittsburgh equipment manufacturer and claimed to do heavier and more difficult work than a mechanical uncoiler . . . . For new 2 and 3-high mills at its plants in the Pittsburgh district the American Sheet & Tin Plate Co. will expend $2,500,000 (p. 58), half of the Steel corporation's appropriation for rehabilitation to help stimulate the recovery of business . . . . By means of an ingenious device, a Pittsburgh district sheet mill (p. 35) is enabled to change storage batteries of industrial lift trucks in 3 minutes.

Selenium an Aid to Free Cutting

A triumph for research is the discovery that by the addition of selenium instead of sulphur to 18-8 chrome-nickel steel the free-cutting qualities of this steel are greatly improved and splitting in upsetting is avoided, thereby over-



A complete side panel of an automobile in one operation is easy for this triple action press at the Briggs Mfg. Co., Detroit



Blanked disks of strip are raw matertal for hydraulic and crank presses of the Hyatt Roller Bearing Co., Harrison, N. J., and are converted into tubular form for races

coming a problem in the production of such articles as wood screws and bolts (p. 23). Selenium is a comparatively rare metal in ferrous metallurgy, costing $2 per pound and being found in meteorites.

Welding Still a Debatable Subject

Suggested modifications of the welding code of the American Society of Mechanical Engineers have stimulated considerable comment (p. 26), moot points including the cost of stress-relieving welded pressure vessels and whether welds should be 100 per cent X-rayed . . . . A new "self consuming" welding rod (p. 28) is said to reduce welding costs appreciably and to be applicable to work where longitudinal seams are prominent . . . . Numerous problems were solved recently when 14,400 steel window and door frames and casements for a Pacific coast building were fabricated (p. 32) by bronze welding and the oxyacetylene blowpipe.

Broad Interest in Market Is Stimulating

The "forgotten man" of the steel industry—the consumer—has emerged so vigorously and numerously in the past week as to supply the most encouragement in months to producers (p. 41). Real tonnage orders are lacking, but the broad show of interest by miscellaneous buyers is significant. . . . Simultaneously, steelmaking operations have advanced to 17 per cent (p. 49), highest since the last three weeks of June. . . . Despite this improved showing by finished products, raw materials maintain their lead in activity. The scrap market is boiling (p. 52), with one sale reaching 20,000 tons. A commitment for 50,000 tons of pig iron by a radiator manufacturer (p. 51) is expected to prompt other melters to act. . . . Reinforcing bar awards (p. 47) soared to a new high for this year. . . . Imported piling, like imported concrete bars, must now be marked (p. 14) with the country of origin.

English and American Markets Parallel

The August rise in sentiment, the early September improvement in production and the mid-September reaction in both sentiment and production in the United States have had their counterparts in England. Now, sentiment there also is retrieving lost ground (p. 56). Carrying the parallel further, pig iron and structural material are the most active in the English market. On the Continent, strengthening of prices is noteworthy . . . . Not since the depression began has the American favorable balance in foreign trade in iron and steel been so narrow as in August (p. 13), when imports increased 5600 tons, mostly pig iron, and exports fell off 20,000 tons.

Diffusion of Ford Business Pleases Steel

With no regrets, the steel industry is watching the tendency of Ford to place parts requirements with outside manufacturers, meanwhile closing many departments at Fordson (p. 17). Contrari-wise, Chrysler is drawing some parts business in. General Motors is straddling . . . . Once more Texas ore is attracting capital, a new company being incorporated (p. 16) at Dallas to build an open-hearth plant. . . . The scrap industry is taking a stand for its rights by protesting (p. 14) against imposition of the new 3 per cent tax on electric power for scrap yards.

The VOICE of INDUSTRY

Communications appearing here do not necessarily reflect the opinion of STEEL *or of its editors.*

To the Editor:

"I wish to congratulate you on the editorial in the Sept. 19 issue of STEEL. You certainly have hit home in regard to the reciprocal price cutting reactions between manufacturers who supply one another with material.

We have had certain specific instances which worked out exactly as you indicate in your article, with a resultant loss of business or loss of prestige to both manufacturers.

There is no question but that this article will produce some good results.

Steel Foundryman

Illinois

Research Locates Future of Steel in Alloy Development

READJUSTMENT of the steel industry to quality instead of quantity production is inevitable, Frank T. Sisco, editor of the Alloys of Iron Research of the Engineering Foundation, states in making public a report of three years of progress on the committee's 5-year program of research.

More than 60 corporations and scientific organizations in the United States and the scientific academies of three European nations are co-operating with the foundation in a world survey, for which a fund of $230,000 has been raised.

"Our researches make it apparent that the steel industry has hardly scratched the surface in research and development, in spite of indications that the demand for cheap steel is gradually levelling off, showing that we are approaching a saturation point in that phase of the industry," said Mr. Sisco.

Future Lies in Quality

"The future of the steel industry lies in a turn to quality production rather than the quantity production of the past, and tremendous improvements and extensions in the manufacture and use of high quality alloy steels should be forthcoming within the next few years.

"The manner in which the big steel companies are co-operating with us in our program of iron alloy research and the interest they are showing in our work indicate that the leaders of the industry are alive to the situation and are preparing to meet the problems of readjustment which are coming up.

"The research committee of the Engineering Foundation originally embarked on a 5-year program of research, but present trends in the steel industry seem to promise the work such great importance that we will have to carry it on indefinitely."

Possibilities Are Unlimited

Mr. Sisco pointed out that, while iron and steel have been known and used almost since the beginning of time, alloy steels have only been in existence during the past 35 years.

"There are thousands of possible combinations in alloy steels," he declared, "and of these only a hundred or so have been developed. Their development, however, has already proved of vast importance to the public. For instance, the discovery of large deposits of molybdenum in Arizona and the consequent industrial discovery of molybdenum steel made possible the automobile and the airplane."

Mr. Sisco explained that molybdenum steel is the only alloy that is both strong and easy to weld. It is used in the construction of the fuselages and wings of airplanes, where hollow steel tubes are employed to give light weight, strength and rigidity.

"The railroads are becoming interested in high quality alloy steels," he continued. "I notice an increasing tendency in transportation to pay less attention to original cost and more to operating cost, which indicates that the railroads will soon be using more expensive materials to build rolling stock that will be cheaper in operation.

Find New Uses for Stainless

"Stainless steel, an alloy of steel and chromium, has been developed quite recently, and new uses for this material have kept pace with developments in its manufacture. It is now being used to a considerable extent in the building industry. Engineers find alloy steel useful. There is several times as much alloy steel in the new Hudson river bridge, for instance, than in any of the old East river bridges.

"I look forward to numerous other discoveries within the next five or ten years which will be as important to the public as stainless steel. The steel demand five years from now will probably not increase in quantity, but it will increase in quality. This work we are doing is concerned with steels of the highest quality, and therein lies its growing importance."

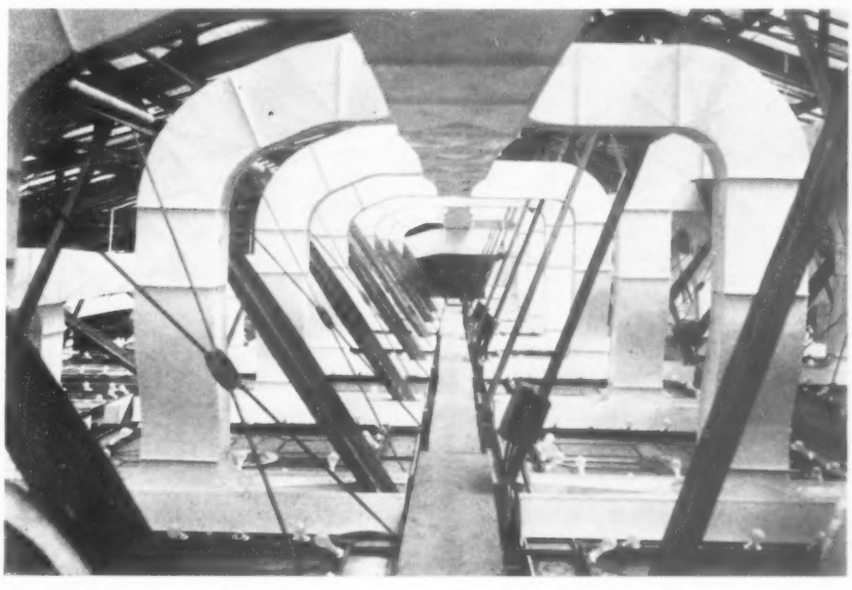
Headed by George B. Waterhouse, professor of metallurgy, Massachusetts Institute of Technology, the iron alloys committee has reviewed each year more than 2000 magazines published in 13 languages and from these more than 3540 technical and scientific papers have been analyzed and 9419 abstracts prepared.

Foreign Interests Co-operate

Active aid is being received from leading steel manufacturers, technical organizations and schools. The National Physical Laboratory in England, the Verein Deutscher Ingenieure in Germany, and the Academie des Sciences in France are supplying information and research data.

The committee is compiling critically all the valuable research work on iron alloys ever done in the world, leaving out all that has no value to the future worker in the field. The group acts as consultants to the steel industry, suggesting new lines or research and supplying data for future developments in manufacture; it also functions as sort of a court to determine whether or not any given piece of research work has practical value.

As revealed in the committee's detailed progress report No. 2 (STEEL, Aug. 1, page 27), the publication schedule calls for three monographs



REMOVING HOT AIR FROM THE SENATE CHAMBER: This maze of steel guide vanes in the roof of the capitol at Washington supplies conditioned air to senators. In 1931 the air-conditioning industry consumed 15,000 tons of galvanized sheets, and is a growing market for plates, pipe and castings as well as sheets. The senate system was installed by the Carrier Engineering Co., Newark, N. J. The White House also is air conditioned

in the next 12 months. The first now in proof form is a study of iron-molybdenum, prepared by J. L. Gregg, Battelle Memorial institute. It contains data on all the research work ever accomplished on alloys of iron and steel with molybdenum and will be a particularly valuable contribution to knowledge.

"The molybdenum group of alloys," said Mr. Sisco, "is of great importance industrially because of the strategic value of molybdenum. Practically all the molybdenum in the world is found within the borders of the United States, which means that in time of war we would not be dependent on imports for alloy steels necessary for the manufacture of war materials.

"Although slightly more expensive than nickel, molybdenum can be used as a substitute for nickel in manufacturing steel alloys. We have to import all the nickel we use, but our large molybdenum deposits in Arizona provide us with an adequate substitute in the event the supply of nickel is cut off. Molybdenum is fairly easy to mine.

"Molybdenum was so rare 25 years ago that it was as costly as gold or platinum, but discovery of our large deposits of the metal opened up industrial uses for it. It began to become important as a steel alloy 15 years ago. Previously all the easily welded steels had been comparatively weak, but steel research workers found that an alloy of molybdenum and steel was easy to weld, while retaining all the strength of other steels. Airplane manufacturers found they could make stronger, lighter planes by using molybdenum steel tubing for framework, a discovery which made today's high speed airplanes possible."

New Uses of Steel Fruitless Unless Pushed, Says Abbott; Sees Business Up

ONE of the most important problems before the steel industry at this time is that of its market, Charles F. Abbott, executive director, American Institute of Steel Construction, New York, is to say in an address before the Advertising Club of Pittsburgh, Sept. 27.

"Output has been increased far beyond present needs," according to Mr. Abbott. "There is a vast opportunity to promote new uses for steel and to further extend its present market. All that is needed is the appropriations to finance, on a co-operative basis, the advertising and promotional campaign of education. New uses cannot be exploited until the need is recognized.

"In the last analysis it is public influence that selects steel or some other material for bridges and buildings. Invariably, the public prefers the material it knows the most about. Its knowledge usually is acquired from the advertising it sees and reads. New markets for steel will never materialize unless this public influence is first obtained.

"There was never a time when advertising and sales executives had such a responsibility placed upon them. They must lead the way in business recovery. We are now face to face with the problem of distribution. We have perfected production, but in the field of distribution very little, if any, real progress has been made. Costs are too high, waste and extravagance too frequently prevail. * * *

"This is a time to increase, not decrease, advertising appropriations. People will begin to purchase when they have been convinced that they are in need and that prices have reached their lowest levels. Advertising is the quickest and cheapest way to create national buying on a profitable basis. * * *

"Efficient salesmanship calls for profits and not for big orders at cost or at a loss. It does not require salesman to obtain profitless orders. Successful sales departments accept the policy of a profit on all sales. Intelligent advertising can point the way, but if profits are lacking then advertising is cast into the discard. * * *

"Important readjustments are under way and the far-sighted business man is now busily engaged in preparations to meet these changes. The merchandising idea of the future will be to produce a superior article, guarantee its quality, then advertise it intelligently.* * *

"It was but 50 years ago that a temperature was discovered that would melt a steel ingot. All of our electricity, transportation, machinery, tools and agricultural implements are the result of this discovery that made possible the economical use of steel.

"A 60-story hotel in New York equipped with air conditioning would pay. We probably will see buildings 200 stories high. Fabricated steel houses are nearly perfected. The Reconstruction Finance Corp., hoarded orders for steel, rails and equipment for our railroads, slum reclamation programs, low inventories—these are but a few of the opportunities that will soon become available to business. Definite improvement has already taken place."

Photoelectric Cells Are Shown at Meeting

Several technical discussions of interest to the steel and allied industries were featured at the sixty-second general meeting of the Electrochemical society, held at Hotel Cleveland, Cleveland, last week, Sept. 22-24. An improved method for the analysis of gaseous elements in metals, electrode potentials of iron-manganese alloys, discoloration of cadmium plate and its prevention, ultra-rapid nickel plating practice in France, the throwing power of plating baths, and properties of iron made by the process of hydrogen reduction were some of the subjects included among the 31 papers presented at the meeting.

The meeting was concluded by a symposium on photoelectricity, at which a number of types of photoelectric cells were demonstrated and their principles of operation discussed. Engineers of the National Carbon Co. demonstrated a new type of primary cell, air depolarized and with caustic alkali electrolyte, intended to replace present dry batteries.

Canadian Output of Iron, Steel Off in August

Toronto, Ont.—Output of steel ingots and direct steel castings in Canada in August was 26,710 gross tons, compared with 27,506 in July and 52,491 tons in August, 1931.

In eight months of 1932, production of ingots and castings has totaled 234,704 tons, against 559,465 tons in the like period of 1931.

Pig iron production in Canada in August broke to the lowest point since 1913 with a total of 5992 gross tons, compared with 7317 tons in July and 23,212 tons in August,1931. On Aug. 31 no blast furnaces were active in Canada.

August output of ferroalloys was 871 tons, compared with 892 tons in July.

Australia Lowers Tariff

Under a revision of Australian tariff regulations effective Sept. 2, the primage duty, usually 10 per cent ad valorem, is being waived on a number of imports, including wire fencing and netting, galvanized iron and steel plates and sheets, water bore casings and most agricultural implements. This is according to a report to the department of commerce from Trade Commissioner Squire at Sydney.

August Imports Gain, while Exports Register Sharp Loss

IMPORTS of steel and iron products into the United States in August gained 5618 tons over July, according to compilations of the iron and steel division, department of commerce, while exports fell off materially. Imports in August were 23,623 tons, compared with 18,005 tons in July. Exports in August were 32,955 tons, compared with 52,558 tons, a loss of 19,603 tons. This is the lowest figure for exports during 1931 and 1932 and the lowest for imports in the same period except the total for July, 1932.

Imports of pig iron rose from 673 tons in July to 7198 tons in August and there were increases also in ferroalloys, scrap, steel rails, hoops and bands, and castings. These gains were of substantial character; several other items also showed a slight upward change. A decided decline was registered in concrete reinforcing bars, merchant bars and barbed wire, with some other items taking smaller losses.

In export items, steel and iron scrap declined from 23,991 tons to 12,578 tons and oil line pipe from 4413 tons to 234 tons. Most other items showed smaller tonnages, though not marked variations. Small increases were recorded in exports of pig iron, skelp, plain structural shapes and welded steel pipe. The loss in scrap and oil line pipe exports was sufficient to account for the sharp decline in total exports. Both these items were unusually heavy in July, giving a figure it was not expected would be maintained.

Canada was the largest market for American goods, taking 12,281 tons, compared with 13,894 tons in July. Japan was second with a total of 8301 tons, compared with 17,730 tons in July. This falling off was due to curtailment in purchases of scrap by Nipponese melters. The Philippine islands were third, the tonnage falling from 4076 tons in July to 2063 tons in August. North and Central America and the West Indies took the largest tonnage of exports, with Asia and Oceanica a close second. South America was third and Europe a poor fourth.

In imports, Canada increased its shipments into the United States from 779 tons in July to 2384 tons in August and British India from 598 tons to 1440 tons. Sweden increased its shipments from 450 tons in July to 3016 tons in August and the Netherlands from 82 to 1004 tons. Imports from the United Kingdom fell from 2115 tons to 600 tons. Figures relative to other countries did not change materially.

FOREIGN TRADE OF UNITED STATES IN IRON AND STEEL

Gross Tons

	1932		1931	
	Imports	Exports	Imports	Exports
Jan.	31,053	40,660	41,628	92,719
Feb.	26,738	40,492	28,045	91,161
March	41,031	49,927	40,402	109,324
April	36,339	58,118	47,872	101,434
May	39,751	80,477	37,176	95,046
June	34,494	52,081	37,819	75,577
July	18,005	52,558	37,190	84,465
Aug.	23,623	32,955	30,139	73,338
(8 mo.)	250,634	407,268	300,271	723,064
Sept.	.....	.....	30,966	69,778
Oct.	.....	.....	29,401	59,335
Nov.	.....	.....	34,658	59,556
Dec.	.....	.....	25,812	57,263
Total	.....	.....	421,108	968,996

ORIGIN OF AUGUST IMPORTS

Gross Tons

	Iron ore	Pig iron	Manganese ore	Ferro-manganese
British India	.....	1,440	.....	.....
Canada	.....	.....	.....	763
Germany	.....	40	3	.....
Italy	.....	.....	.....	33
Netherlands	.....	959	.....	28
Norway	17,196	.....	.....	.....
Soviet Russia	7,900	.....	3,336	.....
Spain	196	.....	.....	.....
Sweden	.....	4,709	.....	.....
United Kingdom	.....	50	.....	260
Total	25,292	7,198	3,339	1,084

	Steel ingots	Steel scrap	Steel bars	Cast iron pipe
Austria	9	.....	9	.....
Belgium	1	.....	958	.....
Canada	.....	864	.....	.....
Czechoslovakia	.....	.....	2	.....
France	.....	.....	106	.....
Germany	1	.....	269	.....
Sweden	.....	.....	76	.....
United Kingdom	.....	.....	7	.....
Other Europe	.....	.....	5	.....
Total	11	864	1,432	.....

EXPORTS OF IRON AND STEEL PRODUCTS FROM THE UNITED STATES

Item	August, 1932	July, 1932	August, 1931
Pig iron	194	146	891
Ferromanganese, spiegel	2	5	68
Iron, steel scrap	12,578	23,991	10,424
Ingots, blooms, billets, slabs, sheet bars	53	28	143
Iron bars	25	140	90
Steel bars	760	820	1,984
Alloy steel bars	82	247	133
Wire rods	469	105	2,167
Boiler, other plates	783	775	3,000
Skelp, iron or steel	2,201	1,787	2,503
Iron sheets, galv.	62	119	218
Steel sheets, galv.	944	1,809	2,976
Steel sheets, black	2,010	2,171	10,610
Iron sheets, black	73	106	246
Hoops, bands, strip	648	1,594	1,811
Tin, ternplate	2,449	2,430	6,643
Water, oil, gas and other tanks, except lined, etc.	72	115	569
Shapes, not fabricated	1,715	1,012	7,937
Shapes, plates, fabricated	410	821	1,370
Metal lath	52	154	212
Frames, sashes, sheet piling	631	1,064	593
Rails	221	668	2,392
Rail fastenings	177	295	610
Boiler tubes, seamless and welded	470	501	534
Casing and oil -line pipe, seamless and welded	234	4,413	1,740
Seamless black pipe, other than casing (1)	43	72	.....
Malleable-iron screwed pipe fittings	105	113	255
Cast-iron screwed pipe fittings	46	59	139
Cast-iron pressure pipe and fittings	16	259	710
Cast-iron soil pipe and fittings	155	303	459
Welded black and galv. steel pipe	2,132	1,860	4,534
Welded black and galv. wrought-iron pipe	116	439	330
Riveted pipe and fittings (1)	43	1	.....
Plain black or galv. iron or steel wire	318	448	1,417
Barbed wire and woven-wire fencing	906	1,169	2,342
Woven-wire screen cloth	49	67	74
Wire rope	72	133	144
Insulated iron or steel wire and cable	5	5	24
Other wire and manufactures	188	159	320
Wire nails	331	935	622
Tacks	24	31	40
Other nails, staples	159	204	221
Bolts, machine screws, nuts, rivets, washers	153	250	401
Iron castings	200	219	306
Steel castings	136	61	295
Car wheels, axles	222	194	423
Horseshoes	23	3	2
Forgings	198	258	416
Total	32,955	52,558	73,338

(1) Not shown prior to 1932.

IMPORTS OF IRON AND STEEL PRODUCTS INTO THE UNITED STATES

Gross Tons

Item	Aug., 1932	July, 1932	Aug., 1931
Pig iron	7,198	673	3,122
Sponge iron	.....	50	.....
Ferromanganese, spiegeleisen (1)	1,084	999	2,295
Ferrochrome (2)	14	.....	.....
Ferrosilicon (3)	8	4	.....
Other ferroalloys	.....	33	249
Scrap	864	95	3,094
Steel ingots, blooms, billets, etc.	14	43	903
Concrete bars, etc.	553	2,027	2,930
Hollow bar, drill steel	99	92	175
Merchant steel bars	1,432	1,905	4,338
Iron slabs	.....	.....	.....
Iron bars	101	21	11
Wire rods	395	267	333
Boiler, other plate	28	42	6
Sheets, skelp, sawplate	1,164	1,187	630
Tin plate	4	15	18
Structural shapes	1,835	1,966	5,650
Sheet piling	1	.....	.....
Rails, fastenings	534	41	172
Cast iron pipe, fittings	.....	176	149
Welded pipe	358	677	887
Other pipe	236	136	336
Barbed wire	859	1,254	962
Round iron, steel wire	68	156	150
Telephone, telegraph wire	.....	3	1
Flat wire, strip steel	113	567	50
Wire rope, strand	103	70	121
Other wire	85	157	31
Hoops and bands	5,664	4,188	1,946
Nails, tacks, staples	671	1,043	1,305
Bolts, nuts, rivets	38	17	37
Horse, mule shoes	9	17	.....
Castings, forgings	111	84	238
Total	23,623	18,005	30,139

(1) Manganese content.
(2) Chromium content.
(3) Silicon content.

Metal Trades Employ More

Metal trades employment in 26 leading centers increased 1.4 per cent during August over July, according to the National Metal Trades association, Chicago. This is the first gain reported since January. The employment index for August stood at 50.3, taking the monthly average for 1925 to 1927 as 100. Largest in-

creases were shown for Chicago, St. Louis and Wilkes-Barre, Pa. The index a year ago stood at slightly under 70.

Freight Traffic Gains Larger than Seasonal

Chicago—Freight traffic on central and western roads continues to show somewhat more than seasonal improvement. Loadings of the Atchison, Topeka & Santa Fe railroad during the week ended Sept. 17 increased 16 per cent over the preceding week's total, compared with an average increase over recent years of 10 per cent. Moreover, the largest gain was shown in loadings of miscellaneous freight rather than in grain and livestock, which expands seasonally at this time.

Loadings of the Illinois Central railroad during the same week declined only 4.7 per cent from the corresponding 1931 week, the smallest decrease in over two years. Chicago & North Western railroad loadings during the Sept. 17 week were 20 per cent larger than during the preceding week, which included Labor Day, and 9 per cent ahead of the week ended Sept. 3.

$4,000,000 for Allegheny

Pittsburgh—An appropriation of approximately $4,000,000 by the war department, Washington, has been made available for navigation improvement on the Allegheny river. This is part of the fund of $41,575,260 provided for flood control and river and harbor improvement by the Federal Relief act. The $4,000,000 fund will be expended in removing dams No. 1, 2, and 3 in the Pittsburgh district and constructing two new dams near the sites of two of the former.

The Business Week In Washington

A TEST case to secure exemption for the iron and steel scrap industry from the 3 per cent tax on electric energy has been filed with the commissioner of internal revenue by Benjamin Schwartz, director-general of the Institute of Scrap Iron & Steel Inc., New York. The institute takes the position that the scrap industry is entitled to exemption from this tax because it manufactures and processes raw materials for industrial consumption.

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The United States tariff commission has postponed from Oct. 20 to Dec. 8 the hearing set on fluorspar.

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Interstate commerce commission has suspended until April 19, 1933, proposed carload freight rates on iron or steel pipe from certain Ohio, Pennsylvania and West Virginia producing points to southwestern destinations via rail-water-rail routes.

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The treasury department has granted a drawback allowance on steel castings manufactured by the Duraloy Co., Pittsburgh, at its plant at New Cumberland, W. Va., with the use of imported nickel and ferrotungsten.

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An examiner preparing a report for the interstate commerce commission found that the rate charged on pig iron, in carloads, from Sparrows Point, Md., to Springfield, Ill., is not unreasonable. He recommends that the complaint of the American Radiator Co. against the Baltimore & Ohio railroad Co. be dismissed.

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The treasury department has ruled that imports of sheet piling, rails and accessories must be marked to show their origin. This follows a recent similar ruling on reinforcing bars.

Barter Aluminum for Oil

Aluminum Co. of Canada Ltd., a Mellon-controlled company, has arranged with the soviet government of Russia to exchange aluminum for crude oil. First shipments of the latter are being received by the La-Salle Oil Co., Montreal, Que., which will refine and distribute it in Canada. It is understood that the tariff will prevent this oil from sale in the United States.

National To Haul More Ore

Pittsburgh—National Steel Corp., Pittsburgh, is preparing to order out two of its seven Great Lakes iron ore freighters. The company has recently been operating one freighter and this move will augment the active number to three.

Milwaukee Plants Busier

Man hours in plants of members of the Milwaukee branch of the National Metal Trades association show a slight increase for the first time in many months, according to the monthly report of W. J. Fairbairn, secretary-manager.

Southern Wheel Co. Resumes

Birmingham, Ala.—Southern Wheel Co. has resumed, returning 65 men to work. Numerous contracts for small lots of small wheels are reported.

STEEL pipe and other equipment for the 1200-mile pipe line of the Iraq Petroleum Co. will be hauled across the Syrian desert in 40-ton loads in this truck-tractor and trailer unit. It was built by the Marmon-Herrington Co. The photograph was taken during a test at the Indianapolis speedway. On a 100-mile nonstop test the loaded unit, with gross weight of 123,625 pounds, averaged 26.68 miles per hour, with gasoline consumption 1.82 miles per gallon, oil consumption 280 miles per gallon and water consumption ⅞-pint in 100 miles. In deceleration the unit was stopped in 3.46 seconds from 20 miles per hour and was accelerated to 20 miles per hour in 20 seconds

Industrial Men in the Day's News

J. Halsey McKown, Assistant General Manager of Sales, Carnegie Steel Co.

AFTER a 27-year affiliation with the Carnegie company he returns to the Pittsburgh office.

HIS promotion places him in charge of sales in the hoop and bar division.

FOR seven years he has been in Detroit, recently as assistant district sales manager.

J. HALSEY McKNOWN, who is now assistant general manager of sales for the Carnegie Steel Co., with headquarters in Pittsburgh, dates his affiliation with the Carnegie company from 1915.

As noted in STEEL for Sept. 19, he was, before Sept. 15, assistant manager of sales in the district office at Detroit of the Carnegie and Illinois Steel Cos.

Mr. McKown's new duties are supervision of the bar and hoop division of the general sales department, and in that post he succeeds S. R. Hoover, who has been assigned to special duties. Twenty-seven years ago, when Mr. McKnown joined the Carnegie company, he was identified with the rail and billet division in Pittsburgh. Five years later, in January, 1910, he was sent to the St. Louis district office, and in August, 1917, he was appointed chief clerk there.

Shortly thereafter, he joined the army and spent a year overseas as lieutenant of infantry. Upon returning in July, 1919, he was made chief clerk in the Detroit office.

He was appointed a salesman in that district in March, 1921, and Jan. 1, 1928, was promoted to assistant sales manager.

JOHN A. COAKLEY, vice president of the American Steel & Wire Co., at Cleveland, in charge of traffic, has been appointed general traffic manager for eight subsidiaries of the United States Steel Corp., with headquarters at Pittsburgh, effective Oct. 1. For 33 years he has been identified with the American Steel & Wire Co., being traffic manager since 1921. In his new post, directing traffic for the American Steel & Wire, American Bridge, American Sheet & Tin Plate, Carnegie Steel, Illinois Steel, Lorain Steel, National Tube and H. C. Frick Coke Cos., Mr. Coakly, who is 51, will control what is probably the largest volume of freight traffic in the United States under the direct supervision of one man.

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J. E. Holt has been appointed district sales representative of the Phoenix Iron Co. in Boston, with offices at 110 State street, that city. He succeeds William H. Allen Jr. Mr. Holt formerly was connected with the Phoenix Iron Co.'s general sales offices in Philadelphia.

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Albert W. Adt, president, John B. Adt Co., Baltimore, has returned from a 3-month trip to European countries.

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Walter J. Kohler, president of the Kohler Co., Kohler, Wis., manufacturer of plumbing and heating units, was nominated for governor of Wisconsin on the Republican ticket at the primary election, Sept. 20, over Gov. Philip F. LaFollette. Mr. Kohler, who served as governor in 1928-1930, was defeated for renomination two years ago.

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Robert T. Rossell, Pittsburgh attorney, has been elected president and a director of the Youngstown & Northern railroad, and William S. McAbee, Pittsburgh, vice president and director. The Youngstown & Northern is a short line in Youngstown, O., owned by the United States Steel Corp.

Wrought Discounts Reduced

Reading Iron Co., Reading, Pa., has issued a new card of discounts on wrought iron pipe, effective Sept. 26. In general, the revised discounts are reduced two points, which for some typical sizes indicates an advance of about $4.50 per ton. All supplementary discounts and preferentials are withdrawn, and the new discounts are net.

The A. M. Byers Co., Pittsburgh, is taking similar action.

Resume Traffic Meetings

Pittsburgh—Pittsburgh District Independent Steel Traffic association resumed monthly meetings Sept. 21. A. R. Kennedy, traffic manager, Pittsburgh Steel Co., Pittsburgh, is chairman.

Obituaries

EDWARD KNEELAND, 74, one of the founders of the Frank-Kneeland Machine Co., and later an officer in the United Engineering & Foundry Co., Pittsburgh, died at Pittsburgh, Sept. 18. Mr. Kneeland was associated with the late Isaac W. Frank when, in 1892, they organized the Frank-Kneeland Machine Co. Nine years later this plant was merged with others in Pennsylvania and Ohio to form the present United Engineering & Foundry Co. In 1901, at the latter company's organization, Mr. Kneeland was elected treasurer and also served as general manager until his retirement in 1923. He was a member of the Duquesne club, Pittsburgh, and among other affiliations has been an original director of the Weirton Steel Co., Weirton, W. Va. Funeral services were held at Pittsburgh, Sept. 21.

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Abraham Torrontor, 58, formerly a scrap dealer at Buffalo, died recently following an automobile accident near Portland, Pa.

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Charles E. McSweeney, president of the American Steel Tank Co., Chicago, died Sept. 14 at the home of a brother near Meeker, Colo.

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Frank Kelly, 74, president, Kelly Foundry & Machine Co., Goshen, Ind., died recently. A son is associated in the business.

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Frank Prosser, 62, member of the engineering firm of Thomas Prosser & Son, New York, died at his home in Englewood, N. J., Sept. 19.

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Charles A. Price, 72, until his retirement a year ago an official of the American Car & Foundry Co. at its Memphis, Tenn., plant, died Sept. 15.

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Richard D. Purcell, 59, treasurer and a director of the Ingersoll-Rand Co. and of the A. S. Cameron Steam Pump Works, died Sept. 20 in the New York offices of the Ingersoll-Rand Co., with which he had been associated 44 years.

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John W. Kirkpatrick, 72, chairman of the West Leechburg Steel Co., Pittsburgh, died Sept. 16 at Oil City, Pa., from injuries received in an automobile accident near there Sept. 12. Born in Pittsburgh, he was educated in the public schools there and at Chester Military academy. Later he entered business with Kirkpatrick & Co. Ltd., and when that company was sold out to the United States Steel Corp. in 1900, with associates he formed the West Leechburg Steel Co. He was a member of the Pittsburgh chamber of commerce and other Pittsburgh clubs.

Weir Urges Elimination Of Unprofitable Selling

E. T. Weir, chairman, National Steel Corp., Pittsburgh, made a strong plea for the elimination of unprofitable selling, in addressing a recent conference of the Purchasing Agents Association of Pittsburgh.

Goods sold at a loss are not a gain to the purchaser or to business in general, and if continued result only in lower wages and decreased purchasing power, he said.

Improper distribution of income and earnings throws consumption out of balance with production and helps to cause depression, according to Mr. Weir. He maintained there is an excess of production only because of a forced decrease in consumption.

Here and There In Industry

MID-CONTINENT IRON & STEEL CORP., Southland Life building, Dallas, Tex., will finance construction of an open-hearth steel plant, utilizing iron ore from local sources in East Texas. The company is capitalized at $1,500,000, of which it is proposed to invest approximately $750,000 in a plant. Tentative list of officers and directors includes D. R. Knapp, consulting engineer, New York, who is expected to be made president; E. F. McKrossin of McKrossin & Co., engineers, New York; C. A. Alexander, formerly general manager, Tata Iron & Steel Co., India; J. H. Brillhart, Fort Worth Structural Steel Co., and R. O. Shaffer, Texas Rail Joint Co., both of Fort Worth, and other prominent Texas business men. Perin Engineering Co., New York, has been engaged to design and build the proposed plant.

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Vincennes Bridge Co., Vincennes, Ind., has changed its name to Vincennes Steel Corp.

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Cincinnati Milling Machine Co. and Cincinnati Grinders Inc. have moved their office and salesroom in Chicago to 2400 West Madison street.

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American Radiator Co. and Petroleum Heat & Power Co., both of New York, have entered into an arrangement which in no way merges their interests or modifies their corporate identities, for the purpose of offering a joint production to be known as the Arco-Petro, a complete home-heating unit of boiler and burner combined, for oil or gas fuel.

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Underwood Elliott Fisher Co., New York, will transfer manufacture of the Underwood portable typewriter from its Bridgeport, Conn., plant to its Hartford, Conn., plant.

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David H. Smith & Sons Inc., Brooklyn, N. Y., has appointed the Austin-Hasting Co. Inc., Cambridge, Mass., to handle the complete Smith line of punches, shears and angle rolls in the New England territory.

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S K F Industries Inc., New York has consolidated the manufacturing activities of the Skayef Ball Bearing Co., Hartford, Conn., and the Hess-Bright Mfg. Co., at Philadelphia. The complete line formerly made at Hartford will be continued at Philadelphia.

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Williamsport Wire Rope Co., Williamsport, Pa., has gone into receivership, by order of federal court at Trenton, N. J. Robert Gilmore, Charles Ballard and Carl Schug are the receivers. An action in equity had been started against the company by the Guaranty Trust Co., New York.

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Black, Sivalls & Bryson Inc. has moved its general offices from Bartlesville, Okla., to Oklahoma City, where its subsidiary, American Tank & Equipment Corp., operates a fabricating plant. The latter, specializing in construction of pressure vessels for the oil industry, recently installed what is said to be the largest heat treating oven located west of the Mississippi river.

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E. J. Lavino & Co., Philadelphia, and Oglebay, Norton & Co., Cleveland, have consolidated sales activities further, effective Oct. 1. The latter will undertake a broader distribution of ferroalloys and raw materials and the Pittsburgh and Chicago offices of E. J. Lavino & Co. will devote their entire energies to the sale of refractories. Oglebay, Norton & Co. have been made exclusive agents for Lavino ferromanganese and spiegeleisen except on the eastern seaboard, and will open an office at 1842 Oliver building, Pittsburgh, in charge of R. E. Runyon and at 208 South LaSalle street, Chicago, in charge of H. W. Grigsby. R. E. Griffith, general manager of sales of the Lavino company, is moving his office from Philadelphia to Pittsburgh, from where he will direct all sales of refractories. Gaylord P. Stowe will be in charge of engineering and J. B. Luckie, H. W. Pigott and J. W. Corriston will be in charge of the Pittsburgh, Chicago and Philadelphia offices, respectively.

MIRRORS OF MOTORDOM

DETROIT

AS PROGRAMS for automobile models for 1933 mature, the three largest interests are pursuing manufacturing policies so diverse as to excite considerable comment.

Ford, it will be recalled, aimed at complete integration, even to iron and steel, in the hey-day of Model T. A break in this policy occurred early in 1928, when parts business was farmed out generously to accelerate production of the new Model A, and even after the Fordson plant was retooled much of this business was not recalled.

Now, the Ford tendency is distinctly toward disintegration, and men who have watched the ebb and flow of Ford policy for two decades believe that eventually the principal manufacturing operations at Fordson will be limited to casting and finishing the engine block.

The frame department at Fordson has been closed and for some months at least Murray will fabricate the frames at its new plant in Ecorse. Practically all Ford bodies are made on the outside, this putting body manufacturers in competition with one another and resulting in their doing a considerable portion of the design and engineering.

Ford Closing Wheel Plant

For some time the drop forge department at Fordson has been virtually closed. Most electrical equipment is being made at Toledo. It is reported that the Ford wheel plant at Hamilton, O., will be practically closed and this business parceled out. Malleable parts always have -been purchased on the outside.

This apparent trend toward reducing the vast Fordson plant to an engine foundry and assembling line is believed by some to be a very direct outcome of the present extremely competitive situation in the low price field and the comparatively lax state of demand. With assemblies at Fordson down to 2000 units a day, 3 days a week, the deduction is that parts makers with their lower overhead can produce more cheaply. More than one factory would like Ford business on the basis of the Ford cost, and this includes iron and steel.

Chrysler, on the other hand, is tending to draw in some business, principally bodies. Several million dollars have been spent on the Dodge plant. Including Chrysler proper, Plymouth, DeSoto and Dodge, the Chrysler organization's requirements are second only to General Motors'. The fortunes of this manufacturer appear to be strongly on the upgrade, and there is a tendency to fill up some idle capacity.

Steel Buying Is Diffused

General Motors, as noted several weeks ago, is adopting more of a middle-of-the-road attitude. Early in the year it appeared that the proposal to utilize idle capacity and waste space of the various subsidiaries, especially in Michigan, would gradually cost parts suppliers their contracts, but at least one-third of certain important parts, including pistons, will continue to be made on the outside.

Considering these three largest consumers of iron and steel in the automotive field, the tendency is toward a diffusion of parts business and also a diffusion of buying, hence the net result is to improve the position of iron and steel sellers slightly.

Ford's ten open-hearth steel furnaces continue down, and it is not believed that large-scale production will be attempted for some time. The Ford buying policy has had tonnage to enforce it, but at present this tonnage is not available, and the competition in the low price field is such that Ford may never again enjoy such dominance.

The underlying confidence of the automobile industry in the 1933 market continues strong. The quarter now ending probably is the worst, both in losses and unit production, since the industry attained real proportions following the war.

Retail sales are somewhat broader, typical being the 38 per cent expansion by Hudson-Essex and the 10 per cent gain of Chevrolet in the first ten days of September. But these sales in general are moving dealer stocks and not hiking assemblies.

Through October and November the trend of automobile production will be definitely upward. The improvement may come a little more slowly than seemed probable a month ago, owing to the failure of general business to live up to expectations for September, as automobile manufacturers display a little less haste in presenting new models, but the trend is assured.

Pig iron always is first evidence to increased activity, as production of engines is undertaken as the initial step of a new model, and shipments to foundries in the Detroit area in September were practically double those of August.

More Steel Being Moved

More releases for steel are being issued. It might be said that practically every automobile manufacturer has taken prices and is either closing or about to close for the fourth quarter. In the closing days of September the movement of steel into Detroit is a shade better, although real volume will not be noted until October. In some cases, steel producers have received permission to ship in September and bill in October certain material originally released for October. Buick, Packard, Chevrolet and Chrysler have made commitments for steel recently.

Continental Motors has officially confirmed the report that it would enter the low price field with a car made at the DeVaux plant in Grand Rapids.

EDITORIAL

Reconstruction Drives May Provide Needed Impetus

DURING the depression numerous attempts have been made to stimulate business recovery through "campaigns" and "drives." Many of these have failed because they were unsound, impractical, poorly organized or badly timed. The futility of these luckless efforts has had the effect of souring the public on all organized movements proposed for hastening the return of prosperity. Practically every plan, no matter how sound it may be in principle or how ably it is conceived and organized, is likely to be greeted with mixed feelings of doubt and suspicion.

This is unfortunate because the time is near at hand when properly conducted promotion of business activity can be made effective. Until very recently any attempt to give impetus to recovery was doomed before it started because industry was in no position to co-operate. Today that situation is changing. Gradually more and more individuals and companies are approaching or have reached a point in their house cleaning where they are prepared to quit the policy of retrenchment and to launch a cautious program of rebuilding for the future. Any sound agency or influence that can be brought to the assistance of these individuals and companies at this time has more than an even chance of success.

Committees Now at Work on Extending Employment and Stimulating Rehabilitation

Therefore, it is to be hoped that industrial executives will consider carefully the opportunities afforded by the activities of the sub-committees of Henry M. Robinson's general reconstruction committee. Three of the six sub-committees are engaged in movements of direct interest to industry.

Walter C. Teagle heads a sub-committee on extending employment. Its objective is to persuade employers to distribute available work more widely in accordance with plans that have proved highly successful by a large number of large and small corporations.

A sub-committee on expanding maintenance and the purchase of equipment by railroads is working with the recently formed Railroad Equipment Financing Corp. and the Reconstruction Finance Corp. to help the carriers arrange for repairs and the purchase of locomotives, cars, rails and other necessities. The assistance of these agencies already has figured in the authorization of several important purchases of equipment.

Of great direct interest to industry is the sub-committee on industrial rehabilitation, of which A. W. Robertson, chairman, Westinghouse Electric & Mfg. Co., is the head and E. T. Weir, chairman, National Steel Corp., is vice chairman. The primary objective of this committee is to "set in motion a succession of orders for improved equipment and machinery which will extend, in their effect on employment and spending, from the factory back to farms, forests and mines. Every order starts a wave of work required in the production, processing, transportation, installation and sales of materials and services that is felt throughout all branches of business."

Careful Guidance and Co-operation of Industry Essential to Success

Great benefits will be derived from these activities if they can be guided intelligently and if industry will but co-operate wholeheartedly. Much depends upon the way the campaign is conducted. If pressure is brought upon industrial companies generally to extend employment or to buy equipment, the results will be disappointing. However, if the effort is directed toward companies that are in a position to go ahead, the results should be gratifying.

For instance, consider the case of a manufacturer, who through good management during the depression, has placed its house in order. Recently it has received a few encouraging contracts. It may show a small profit in September. Its officers, feeling that the worst is over, are beginning to think of improving certain equipment and expanding the company's operations moderately.

If the reconstruction committees can help this company, and simultaneously thousands of others similarly situated, to proceed now with the contemplated rehabilitation instead of waiting for somebody else to start—then the wheels of industrial activity will surely and increasingly gain momentum.

The initial impulse is badly needed. Perhaps the committees, timing their effort accurately, can provide that impulse.

THE INDUSTRIAL DIAL

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DURING July and August industrial executives looked forward to September with confidence that it would be marked by a moderate upturn in activity. This expectation has been fulfilled in a degree, but under circumstances that were not fully anticipated.

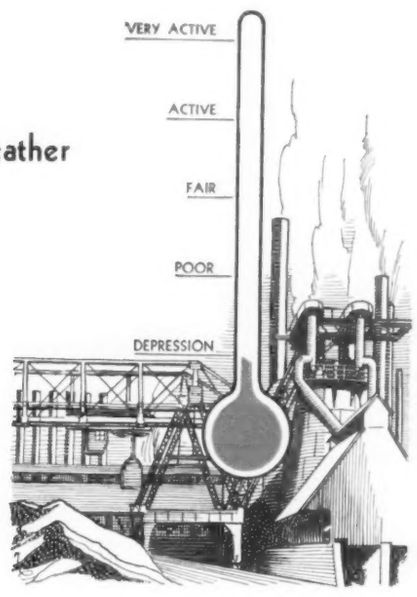
The improvement since Labor day has been fairly well defined, but there have been disconcerting irregularities. Car loadings, electric power output and a number of other barometers have gained consistently. Commodity prices have continued to tend upward, although repeated recessions of short duration have made observers nervous. The rate of steelmaking operations has risen slightly, but not positively enough to indicate a clearly defined trend upward.

Where Business Stands

Monthly Average, 1931 = 100

	Aug., 1932	July 1932	Aug., 1931
Steel Ingot Output	38.5	39.6	82.5
Pig Iron Output	34.1	36.8	82.5
Freight Movement	72.1	73.2	104.7
Building Construction	45.6	47.2	100.4
Automobile Output	43.6	57.6	93.1
Wholesale Prices	84.8	77.5	96.9

Industrial Weather



TREND:

Prospect Brighter

Sentiment Soft in Mid-Month

Business sentiment has fluctuated sharply while this backing and filling in industrial activity has been going on. The week of Sept. 12, which had been expected to develop positive signs of improvement and which did so, was marred by a sinking spell in sentiment which probably can be attributed to uncertainty arising from the Maine election. The doubt which prevailed early in that week could not have been based on actual business developments because the records at that time were more definitely favorable than at any time in many months.

Fortunately the fear that broke out anew on Sept. 12 now seems to have disappeared, although some restraint still is in evidence. It is likely, however, that the momentary loss of confidence during the mid-month period had the unfortunate effect of postponing activities in some quarters by at least a month.

Reconstruction Work More Practical

As September draws to a close the outlook seems somewhat brighter. The results of R. F. C. activity are beginning to crystallize in the definite form of orders for commodities. Less is heard of credit and more of actual buying. Business is beginning to think of orders in the terms of the employment they will provide.

This is gratifying, because it shows that the groundwork of financial preparation has been well laid. From now on effects for reconstruction can be focused more sharply on the practical task of putting the nation's workers and plants back to work. This, after all, is the key to recovery.

Business Trend Charts of the Month

Production

Blast furnace production rate ..... Sept. 12, p. 20
Steel ingot production ..... Sept. 19, p. 20
Pig iron production ..... Sept. 12, p. 21
Industrial production ..... Sept. 5, p. 22

Demand

Unfilled orders, U. S. Steel Corp. ..... Sept. 19, p. 20
Railroad car orders ..... Sept. 12, p. 20
Index of machine tool orders ..... Sept. 26, p. 21
Building construction ..... Sept. 26, p. 22
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Foundry equipment orders ..... Sept. 5, p. 23

Prices

Bradstreet's index of commodity prices ..... Sept. 19, p. 20
Iron and steel price index ..... Sept. 5, p. 21; Sept. 12, p. 19; Sept. 19, p. 19

Miscellaneous

Foreign trade ..... Sept. 5, p. 22; Sept. 26, p. 21
Freight traffic ..... Sept. 5, p. 24; Sept. 12, p. 21
Commercial failures ..... Sept. 26, p. 21
Iron and steel imports and exports ..... Sept. 5, p. 23
Monthly railroad earnings ..... Sept. 26, p. 22

Thumb Nail Sketches Of Business

Since early in June the daily average output of bituminous coal has been edging up gradually from a low point of about 600,000 tons to a level during the week of Sept. 10 of 998,000 tons. The gain during this period was considerably more than the corresponding increases in 1929, 1930 and 1931. However the daily average still is far below the lowest records of those years.

Nonferrous Prices Reverse Trend

Indications of the reversal in the trend of nonferrous metal prices, the following tabulation of monthly averages for 1932 is illuminating:

	June	July	August
Antimony	5.038	5.000	5.217
Electrolytic copper	5.365	5.285	5.425
Casting copper	5.115	5.035	5.175
Aluminum	23.30	23.30	23.30
Zinc	2.793	2.546	2.761
Tin, straits Spot*	19.658	20.929	22.992

*May, 20,950

Note that aluminum remained unchanged, tin turned upward in July from June and antimony, copper and zinc turned upward in August from July.

Sees Billion and Three-Quarters of Construction

American Architect has published a forecast of new building and modernization projects in the United States for September, 1932 to September, 1933 based on a survey completed Aug. 15, 1932. It estimates that during this period work involving $1,753,806,000 will be undertaken This includes $572,738,000 now in the planning stage and $1,181,068,000 in contemplated construction based on architect's reports. The area of greatest indicated activity includes New York, Massachusets, Pennsylvania, District of Columbia, Illinois and California. Projects aggregating more than $100,000,000 are scheduled in each of these states. Work involving from $50,000,000 to $100,000,000 is seen in Minnesota, Ohio and New Jersey. No federal work is included in the survey except that given out to private architects.

Foreign Outlook Spotty; Sentiment Better

Excerpts from cabled reports from foreign representatives of the United States department of commerce show a slight improvement in a few of the important countries of Europe and Asia. In China the outlook is clouded by unrest over the Manchurian situation, but improved export activities are reported and good crops are predicted. Japanese farmers are encouraged by prospects of profits on fall cocoons as a result of the advance in silk prices. In Great Britain sentiment is better although trade has changed little and the cotton weavers' strike is disconcerting. In France production and consumption in August continued low, unemployment remained high and foreign trade declined, but wholesale prices are rising and grain crops are good. In Germany the recent strength in security prices continues to reflect improvement but the dissolution of the Reichstag creates new uncertainty.

Car Loadings 28 Per Cent Below 1931

To date freight car loadings in 1932 total 18,669,811 compared with 25,795,595 and 31,508,909 in the corresponding periods of 1931 and 1930, respectively. The gains in recent weeks have been somewhat more than seasonal.

The Barometer of Business

Industrial Indicators

	Aug., 1932	July, 1932	Aug., 1931
Pig iron output (Daily average, tons)	17,045	18,394	41,264
Machine Tool Index	30.3	33.8	68.9
Unfilled orders (tons)	1,969,595	1,966,302	3,169,457
Ingot output (Daily average, tons)	30,830	31,701	66,032
Dodge Bldg., awards in 37 staes (sq. ft.)	13,863,500	14,399,000	30,631,200
Automobile output	*89,855	118,611	191,741
Coal output, tons	22,465,000	17,857,000	30,517,000
Business failures; number	2,796	2,596	1,944
Business failures; liabilities	$77,031,212	$87,189,639	$53,025,132
Cement production, Bbls.	7,659,000	7,659,000	13,549,000
Cotton consumption, bales	402,601	278,656	425,819
Car loadings (weekly average)	516,269	524,000	749,457

*Estimated.

Foreign Trade

Exports	$109,000,000	$106,842,000	$164,808,000
Imports	$91,000,000	$79,420,000	$166,679,000
Gold exports	$18,067,000	$23,474,000	$39,000
Gold imports	$24,170,000	$17,837,000	$57,539,000

Financial Indicators

	Aug., 1932	July, 1932	Aug., 1931
25 Industrial stocks	$103.32	$63.41	$190.54
25 Rail stocks	$29.46	$11.88	$58.43
40 Bonds	$71.23	$57.90	$81.73
Bank clearings (000 omitted)	$19,787,496	$19,049,639	$28,907,922
Commercial paper rate N. Y., per cent)	2½	2½	2
*Commercial loans (000 omitted)	$6,280,000	$6,405,000	$7,845,000
Federal Reserve ratio, per cent	58.9	56.5	83.9
**Railroad earnings	$11,596,851	$12,653,515	$56,534,903
Stock sales, N. Y. stock exchange	82,649,154	23,055,724	24,890,277
Bond sales, par value	$344,494,950	$243,637,000	$188,645,350

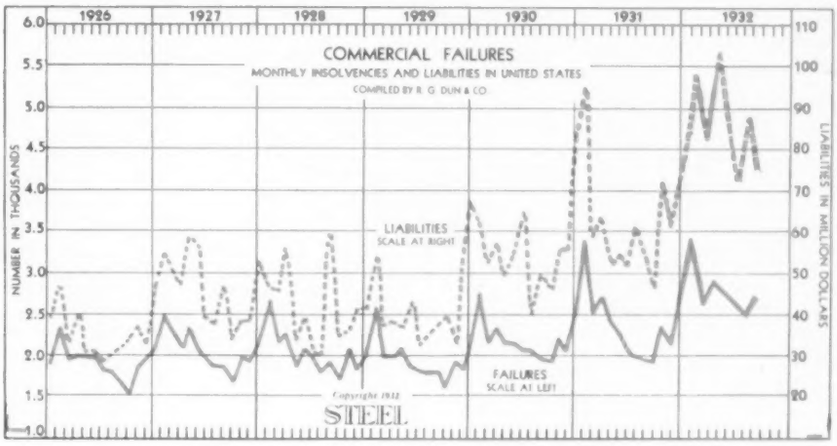
*Leading member banks Federal Reserve System.
**July, June and July respectively.

Commodity Prices

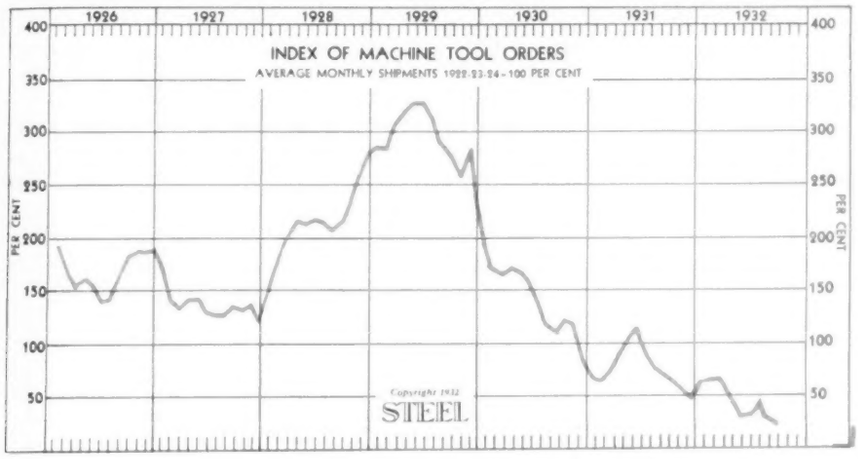
	Aug., 1932	July, 1932	Aug., 1931	Monthly aver. 1913
STEEL's composite average of 14 iron and steel prices	$29.32	$29.47	$31.05	$26.32
Bradstreet's index	$7.17	$6.79	$8.49	$9.21
Wheat, cash (bushel)	68c	62c	49c	92c
Corn, cash (bushel)	47c	49c	66c	51c
Petroleum, crude (Bbl.)	.....	90c	60c	$2.50

Commercial Failures Show Gain As Liabilities Decline

Commercial failures in the United States during August totaled 2,796. This represents a gain of 7.7 per cent over the preceding month. However, the present indebtedness of $77,031,212 is below that of last month. According to statistics compiled by R. G. Dun & Co., business failures for this year to date have numbered 22,825, with a total indebtedness amounting to $701,505,139. For the same period in 1931, when defaults also were very numerous, the number was 19,034 for $484,520,354 of liabilities.



	Number	Liabilities
August, 1932	2,796	$77,031,212
July, 1932	2,596	$87,189,639
August, 1931	1,944	$53,025,132



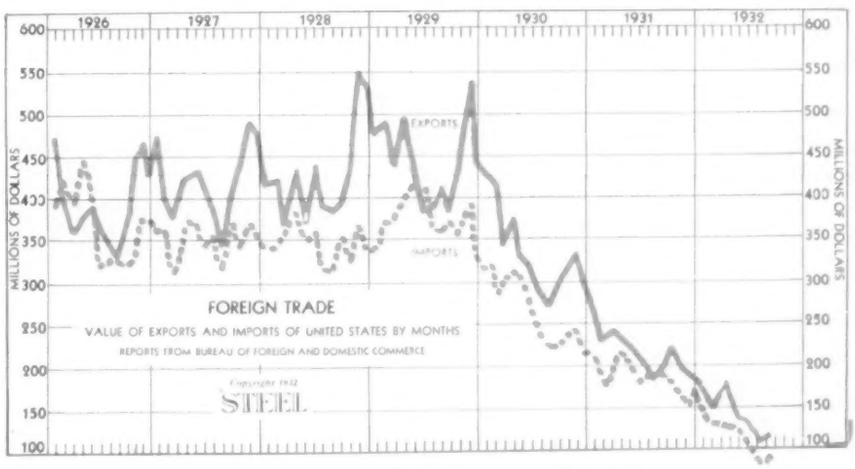
	Per Cent
August, 1932	30.3
July, 1932	33.8
August, 1931	68.9

Index of Machine Tool Orders Slips Downward in August

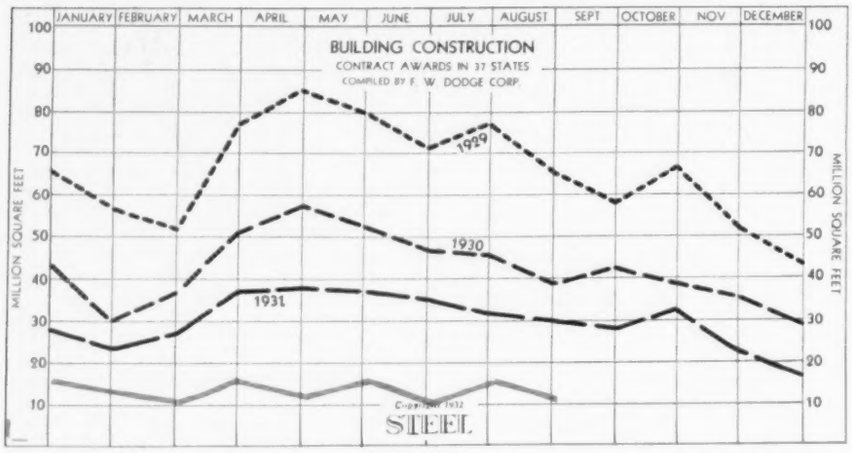
According to the report for August received from the National Machine Tool Builder's association, the three month's moving average of machine tool orders slumped to a new low for a number of years. The index of gross orders for August was 30.3 compared with 33.8 for the preceding month and 68.9 for August last year. August shipments at 29.9 were the heaviest since May. The index of unfilled orders stood at 77.6 compared to 75.7 a month ago and 181.6 a year ago.

Foreign Trade Up Slightly; Trade Balance Declines

Although the report from the bureau of foreign and domestic commerce for August reveals a slight gain in this country's foreign merchandise trade, the favorable trade balance of $18,000,000 represents a sharp drop from the $27,422,000 of last month. Exports in August were valued at $109,000,000 compared to $106,842,000 for the preceding month. August imports totaled $91,000,000 compared to $79,420,000 for July and $166,679,000 for August, 1931. The favorable trade balance thus far this year aggregates $139,664,000.



	Exports	Imports
August, 1932	$109,000,000	$91,000,000
July, 1932	$106,842,000	$79,420,000
August, 1931	$164,808,000	$166,679,000



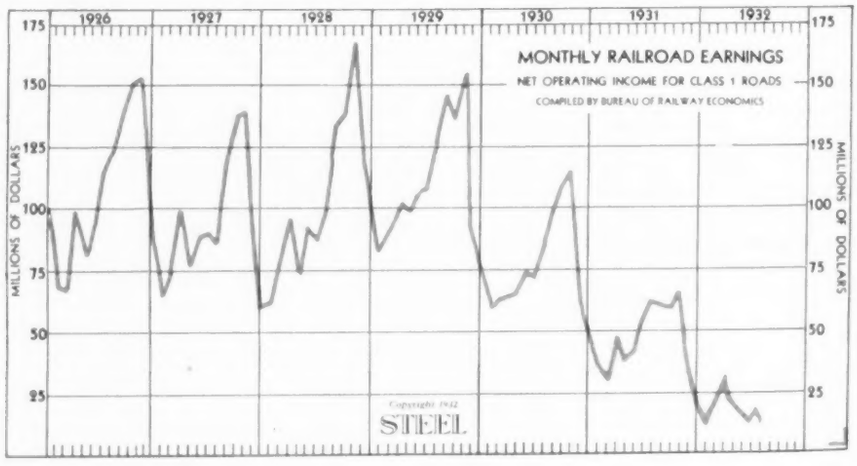
	Square Feet
August, 1932	13,863,500
July, 1932	14,399,000
August, 1931	30,361,200

Building Awards Down in August; Valuations Up 4 Per Cent

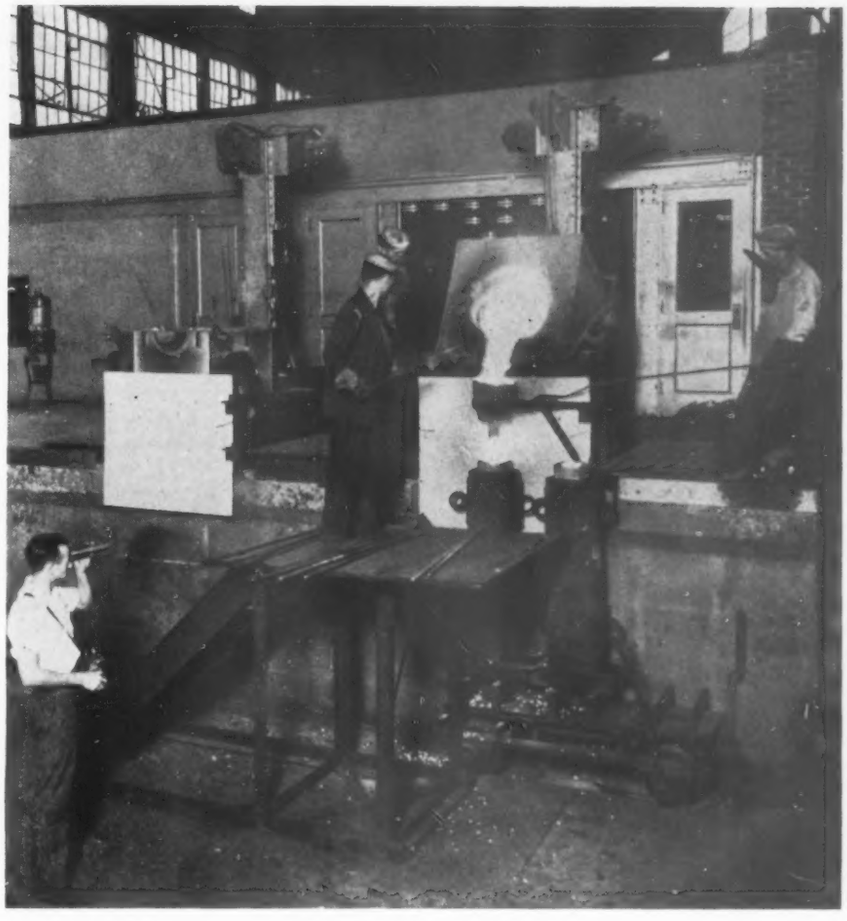
Building construction as measured in new floor space declined slightly in August, although the valuation of construction awards gained 4 per cent over the previous month, according to the report of the F. W. Dodge Corp. Awards in 37 eastern states involved 13,863,500 square feet in August as compared with 14,399,000 in July. The valuation of contracts awarded in August totaled $133,988,100 compared to $233,106,100 for the same period last year, a decline of 42.5 per cent. While conditions within the building trade have shown slight improvement, a permanent advancement depends upon the demand for new construction. This demand is extremely low at the present time.

Railway Earnings in July Decline To 0.49 Per Cent on Investment

For the month of July, class I railroads had a net railway operating income of $11,596,851, which was at the annual rate of return of 0.49 per cent on their property investment. The current report from the Bureau of Railway Economics reveals the lowest point in net earnings thus far this year. In July, 1931, net operating income was $56,960,177 or 2.39 per cent. For the first seven months of this year the railroads net operating income aggregated $123,926,226 which was at the annual return of 0.92 per cent. This compilation as to earnings for the first seven months of 1932 is based on reports from 167 class 1 roads representing a total of 242,140 miles.



R. R. Earnings	
July, 1932	$11,596,851
June, 1932	12,653,515
July, 1931	56,960,177



POURING a heat of selenium steel (right) from a high-frequency coreless induction furnace. Commercially pure selenium metal may be obtained in the form of cast sticks as shown above, but in practice the alloying element is added shortly before the heat is poured, in the form of ferroselenium powder, as shown below

SELENIUM IN 18-8 STEEL IMPROVES FREE-MACHINING PROPERTIES

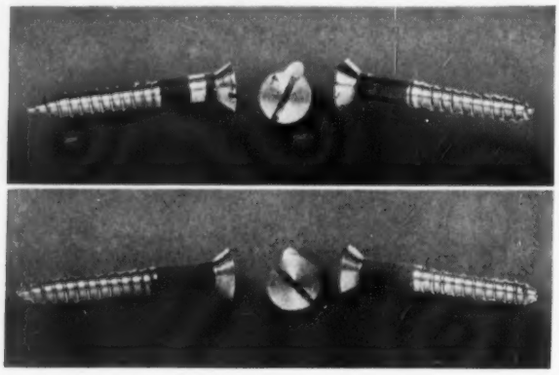
SINCE corrosion-resisting steel was first introduced much effort has been expended in the development of grades featuring free-machining properties. One of the companies which, particularly during the last four years, has pursued investigational work along this line with both straight chromium and the more recent 18-8 chrome-nickel types is the Carpenter Steel Co., Reading, Pa. The first steels with so-called antifriction qualities, resulting from this research, incorporated high-sulphur content, of the order of 0.30 per cent. These were described in STEEL, July 24, 1930, p. 50, and Jan. 18, 1932, p. 26. Recent investigation by the Carpenter company, however, has disclosed that improved free-cutting characteristics are obtained by the addition of the element selenium in place of sulphur in 18-8 chrome-nickel steel.

Selenium, a comparatively rare element in ferrous metallurgy, is claimed to have several distinct advantages over sulphur as a free-cutting agent. Sulphur, when added to a steel bath, combines with some metal to form a metallic sulphide, such as manganese sulphide, zirconium sulphide, molybdenum sulphide, etc. These sulphides are entirely insoluble in the steel and occur in the cast ingot as small nonmetallic particles. They are ductile at forging and rolling temperatures and therefore during the hot working of the steel, the sulphides are drawn out into long threads or stringers. Naturally these nonmetallic stringers interrupt the continuity of the metal and tend to render the rolled bar much less ductile in a transverse direction.

Selenium, like sulphur, apparently combines with a metal to form a selenide but these selenides are partially soluble in the steel so that there is not so much nonmetallic matter to form stringers and as a consequence the finished product is much tougher and less subject to

transverse fracture. Experiments indicate that the free-machining qualities are proportional to the total selenium content—regardless of the percentage that may go into solution or the percentage that remains as insoluble selenides.

Technical literature on the history and important applications of selenium reveals that the element was discovered in 1817 and named selenium after the Greek word *selenos* meaning "the moon." This appelation is probably attributable to the fact that the metal usually is found in meteoric iron. As early as 1873 it was discovered that selenium, in its crystalline form, had the peculiar property of being sensitive to light, its electrical conductivity increasing from 15 to 100 per cent upon being exposed to light. This increase is lost as soon as the light is removed and this fact was made use of in the well-known selenium cell in which an electric current is passed through a selenium coil upon which a ray of light is directed. The current may be varied by interrupting the light source. This principle is the basis of television and other photoelectric apparatus, but the selenium cell has since been replaced by other appliances which react more quickly to light variations.



WOOD screws of high - sulphur 18-8 chrome-nickel steel (top), the heads having split during cold upsetting. This difficulty has been overcome by the use of selenium 18-8 steel, as shown in the lower illustration

Present Use Is New

Selenium has been used to a limited extent in the glass industry as a decolorizer as well as a coloring material. It also makes an excellent flame-proofing material for electric cables and finds some application in the rubber industry as a vulcanizer and accelerating agent. However, its use as a free-machining agent in steel appears to be entirely new.

A by-product of copper smelting and the manufacture of sulphuric acid, production of selenium in the United States is shown by bureau of mines statistics to have been approximately 350,000 pounds in 1927. Crystalline selenium occurs in steel-gray hexagonal crystals and frequently is sold to the industrial market either in the form of a fine powder or in cast sticks as shown in the illustration on the first page of this article. Present price of the pure metal is about $2 per pound.

Early experimental work at the Carpenter Steel Co. was done with elemental selenium, but the losses incurred in adding it to the molten steel bath led to the adoption of an alloy of iron and selenium developed for the purpose by the American Smelting & Refining Co. A typical analysis of ferroselenium runs about 52 per cent selenium, 41 per cent iron, with small percentages of carbon, silicon, phosphorus, sulphur, etc. The alloy is heavier than pure selenium and is more readily assimilated by the steel bath.

The first commercial heat of selenium steel was an austenitic chrome-nickel steel containing approximately 18 per cent chromium, 9 per cent nickel and 0.25 per cent selenium. It was melted in a high-frequency induction furnace according to standard practice, a carefully weighed amount of ferroselenium being added to the bath a few minutes before the steel was ready to be poured.

Processing Unchanged

Casting, hammering, rolling and annealing proceed in the same way as with any other type of 18-8 corrosion-resisting steel. The finished product can be cut in automatic screw machines at 60 to 70 per cent of the speed of bessemer screw stock. It can be drilled, tapped, threaded and otherwise machined with ordinary machine shop tools and practice.

The greater transverse toughness of 18-8 steel containing selenium reflects in several ways upon the fabrication and use of the product. The selenium steel is easier to roll and forge than the high-sulphur types, being less subject to splitting, cracking or opening up at the ends. The selenium steel can be upset with greater safety and less trouble from splitting.

High sulphur 18-8 is useless in the form of sheets or strip because it will stand practically no longitudinal bending and no deep drawing. The selenium steel will do both—although not so well as 18-8 steel without either sulphur or selenium. Selenium steel can be used where the high-sulphur 18-8 steel would not be safe. For example, high-sulphur stainless steels have fallen short of the requirements for pistol barrels because of their tendency to split. It is indicated that the selenium steels may prove satisfactory for this purpose. In any application where the parts are subject to internal bursting strain or transverse shock, the selenium steels will prove much safer than those containing high sulphur.

That this improvement is reflected in the manufacture of cold headed products has been definitely shown in the plants of several manufacturers of screws and bolts. Selenium steel can be upset into wood screws and even special screws with a thin flat head without rupture. Slotting and shaving operations are being conducted at somewhat reduced speeds due to the great hardness of the cold worked metal, but the operations are reported to be entirely commercial and much less expensive than on the same analysis of steel without selenium. Thread rolling and thread cutting present no difficulties.

Split Heads Avoided

An accompanying illustration shows in the top group screws made from high-sulphur free-machining 18-8 steel. These are typical of the difficulty encountered with split heads resulting from the extensive use of sulphur. The lower group shows wood screws made from 18-8 steel containing selenium, and gives an idea of the amount of cold work that can be done on the steel without splitting and still leave the material sufficiently machinable to permit cutting the slots.

It is of interest in connection with the above to consider the actual transverse physical properties on 18 per cent chromium-8 per cent nickel steel containing high sulphur and the same analysis containing selenium. For this purpose, bars 4¾ inches wide by 1 inch thick were forged from two heats of steel of the following analysis:

	High-sulphur 18-8	Selenium 18-8
Analysis	——Per cent——	
Carbon	0.084	0.094
Sulphur	0.309	0.009
Chromium	18.15	18.40
Nickel	9.26	8.97
Selenium	.....	0.22

Both bars were softened by quenching in water from 1830 degrees Fahr. Standard tensile specimens were machined from the bars so that the axis of the specimens lay at right angles to the direction

of forging. This procedure of course placed the sulphide and selenide stringers at right angles to the length of the test specimen. The test figures are as follows:

Physical properties	High-sulphur 18-8	Selenium 18-8
Yield point, lbs. per sq. in.	45,100	45,000
Tensile strength, lbs. per sq. in.	93,700	93,700
Elongation in 2 inches, per cent	41.8	52.2
Reduction of area, per cent	33.4	43.4
Izod impact, foot-pounds	15	27
Brinell hardness	148	148

From a corrosion resisting standpoint selenium also has some advantages. It does not impair in any way the resistance to the salt spray test and it does increase the resistance of the metal to certain chemical solvents such as boiling solution of acetic acid or aluminum sulphate. U. S. patent No. 1,846,100, covering the use of selenium in stainless steels, has been granted to Frank R. Palmer, assistant to the president of the Carpenter Steel Co., and assigned to the company.

In making possible the commercial manufacture of 18-8 cold-headed products, selenium has removed one of the last barriers to the general use of stainless steel screws and bolts. Commercial production has been established for several years on the straight chromium grades of stainless and now that several manufacturers are ready to accept orders for 18-8 screws, the question of supply is apparently well answered.

Advisory Board Schedules Meeting

THE sixth annual open meeting of the Metallurgical Advisory board of Carnegie Institute of Technology, Pittsburgh, will be held Friday, Oct. 28, in Pittsburgh. The morning session will be devoted to reports on studies made by the bureau of metallurgical research at the Carnegie institute on the alloys of iron, manganese and carbon. Dr. F. M. Walters Jr., former head of the bureau, will present a paper, "Transformations of the Binary Iron-Manganese Alloys," reporting on the effects on transformations of the rate of heating, permanent deformation, and heterogeneity, as well as a comparison of dilatometric and magnetic observations.

Dr. V. N. Krivobok and Dr. John Eckel, also of the bureau staff, will report on "The Effect of Carbon on 10 Per Cent Iron-Manganese Alloys." Dr. Krivobok also will report on three phases of his study of chrome-nickel-iron alloys; namely, low carbon alloys, decomposition of 18-8 alloys with various additions, and strength at elevated temperatures.

The third report of the morning session will be delivered by Dr Robert F. Mehl, newly appointed director of the bureau of metallurgical research and former metallurgist with the American Rolling Mill Co., Middletown, O., and his assistants, Dr. C. S. Barrett and Dr. D. W. Smith. The subject of the report will be "The Segregation of Ferrite and Cementite from Austenite," a study begun at the Naval Research laboratory at Washington under Dr. Mehl's direction and completed later at Pittsburgh. The report will describe the complete study of the crystallographic transformation involved in the precipitation of ferrite and cementite from austenite.

The afternoon session will be devoted to the work of Dr. C. H. Herty Jr., and his assistants who are working under auspices of the metallurgical advistory board. Dr. Herty's first report will be on "The Deoxidation of Steel with Manganese-Aluminum-Silicon Alloys." In his second report he will be assisted by C. S. Christopher and the subject will be "The Use of Manganese-Silicon Alloys in Open-Hearth Process." The final report with M. W. Lightner will be on "The Effect of Deoxidation and Furnace Manipulation on Some Physical Properties of Open-Hearth Steel." Open discussion of the various reports will follow.

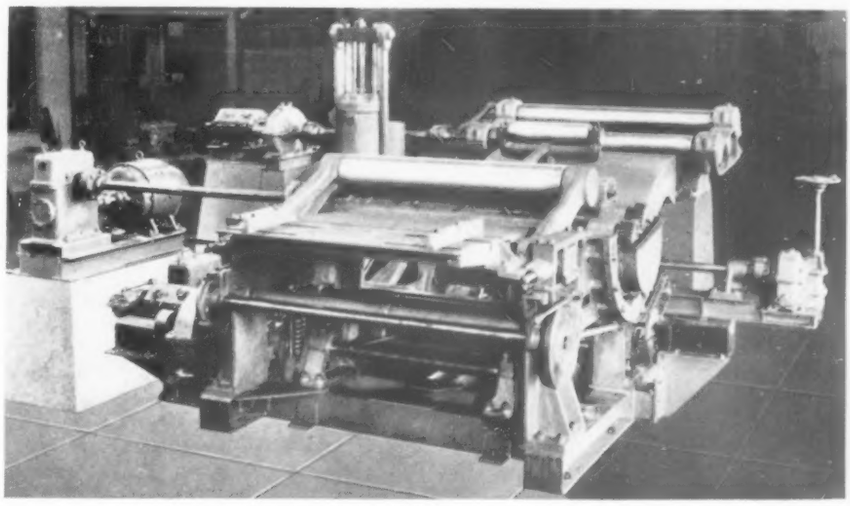
A business session and dinner, at which Dr. Thomas F. Baker, president of the Carnegie Institute of Technology, will preside, has been arranged for the evening meeting at Hotel Schenley.

Magnetic Uncoiler Developed To Handle Wide, Heavy-Gage Strip

AN ADVANCED type of uncoiler for cold-rolled strip mills, known as the magnetic uncoiler, has been announced by United Engineering & Foundry Co., Pittsburgh. The machine is an invention of H. H. Talbot, chief engineer of the company, and will handle heavier and more difficult work than the mechanical uncoiler.

Wide, heavy-gage, hot-rolled coils are delivered to the magnetic uncoiler by a crane or other transporting device and are laid upon a pair of horizontal carrier rolls with a magnet between them. Rolls are revolved until the outer end of the strip rests directly over the magnet, which holds this end tightly while the two rolls tilt forward and roll the rest of the coil down an incline into a coil box. About 10 feet of the strip is unrolled in this manner and its curl is unbent. The magnet then is released, the coil box rolls are revolved and the loose end of the strip sweeps in an arc over the coil to a set of revolving open straightening rolls, which are immediately closed and commence to straighten and feed the strip neatly into the entry guides of the cold mill.

A following coil is laid upon the carrier rolls of the magnetic uncoiler as soon as the first coil rolls into the coil box, so that it can be unrolled immediately as soon as the last end disappears into the mill. The magnetic uncoiler has operated successfully under commercial conditions.



Feeding heavy-gage hot-rolled strip coils into the cold mill is facilitated by this magnetic uncoiler

Modifications to Welding Code Arouse Comment

IN AN article appearing under his signature in the May 23 issue of STEEL, Robert E. Kinkead, consulting engineer, Cleveland, discussed the commercial application of the new welding code of the American Society of Mechanical Engineers and suggested certain modifications which are likely to be made in the code for the fusion welding of pressure vessels.

The author pointed out that as compared with the large number of vessels which have been welded, few have been fabricated in accordance with the new code rules; the regulations, because of their newness, are in the process of being interpreted and modified, and the manner in which such interpretation and modifications are made involves some millions of dollars of expenditures on the part of both manufacturers and users of welded pressure vessels as well as other weld-construction.

Mr. Kinkead's comments were intended to stimulate a constructive discussion of the subject and implied no criticism of the boiler code committee; in fact, he paid compliment to it.

Exceptions Are Taken

Taking advantage of the opportunity to add to the discussion, A. Hurtgen, chief metallurgist, Henry Vogt Machine Co., Louisville, Ky., has made lengthy comments on the questions involved and, as might be expected, he takes exception to certain statements made by the author. Mr. Kinkead, therefore, has been given an opportunity to reply.

Believing the subject to be one of general interest, STEEL is reproducing the comments of both Mr. Hurtgen and Mr. Kinkead as follows:

To the Editor:

I wish to take exception to Mr. Kinkead's statement that "if the code is correct, most of the welding which has been done in the last five years * * * should be condemned and the equipment taken out of service in the interest of safety." This is a very unaggressive attitude as it implies that recognition of development and improvement over methods which obviously are antiquated and of lower quality should not be tolerated.

I should like to ask the author if there is a single scientific development which has not had an evolutionary history, the present-day development and refinement being an ultimate, if you prefer, evolving from some very crude idea and method many years ago. Is it true that we may say, therefore, the welding and its application of today must revert back to exactly the same standards of safety and quality which were acceptable 20 years or so ago? This simply does not follow and the writer believes that the author is somewhat hasty and unjustified to assume such an attitude.

Further, I would like to call the author's attention to his statement regarding insurance, "that the fundamental basis underlying all insurance is the past experience or mortality rates." The vessels which were welded and put into service years ago were insured on a premium basis founded on past experience with such workmanship and it is logical that the insurance consideration will ever in the future have its foundation limited on such past experience. If the mortality rate is lowered, it is logical that lower insurance rates will obviously be enjoyed by the consumer and vice versa. And, also, does the author know of any companies which have gone bankrupt due to having carried such insurance? If not, then the premium rate was in adjustment with the risk of mortality.

As regards the X-raying of vessels, the writer is not thoroughly convinced that the code, as now written, is thoroughly adequate for precluding the possibility of failure. In this connection, I have written the code committeer of the A. S. M. E., regarding numerous revisions. However, although the writer only partially agrees that because the X-ray and gamma-ray are not applicable to the examination of nozzle welds which offer the greater hazard, does it not seem reasonable, that if a greater portion of the welding on a vessel is X-rayed and found O. K., that the welding of the nozzles will not be practically of the same general quality?

Requires Good Design

The design of nozzles with their reinforcements should properly take care of the stress characteristic and this becomes a matter of good engineering design. Take for example, in the metallurgical tests of material to determine its suitability for a certain application, including chemical analyses, tensile tests, the determination of fatigue, hardness, etc., only a very small portion of an aggregate material is actually tested, the results obtained from such tests are an accepted criterion of the entire properties of the raw material, and we positively know that there is quite a variation in these properties as can be shown by taking tests from different portions of an ingot of steel.

Therefore, in testing welds on a vessel it is not logical that we must X-ray every nozzle, flange, etc., but the results as shown from the examination of the girth and longitudinal seams should serve as a criterion of acceptability just as in the chemical or physical analyses of a heat of steel from the mill. The peculiar discrepancy in the present method of X-raying is that it only reveals defects of a mechanical nature and every welding engineer knows that defects of a chemical nature are far more hazardous, and these can only be determined through diffraction methods or by microscopic examination.

In regard to the lime wash, let us assume we have a weld of relatively little ductility with a corresponding high yield point where the stresses will not manifest themselves in cracking of the lime wash. In such an instance there is considerable danger of making improper deductions. Ductility is one of the first problems for any welding technique to overcome. A vessel with little ductility in the weld, with a corresponding high yield point, may prove very fatal in the useful life of the vessel due to the lowered fatigue properties of a brittle material.

Costs Are Questioned

I should like to ask the author if the estimate of $20 to $60 per ton for stress relieving is merely a matter of opinion, or, if he has actual data from shops equipped for this class of work to substantiate this cost. If your experience and data shows that this cost is actually encountered I would like to ask what kind of equipment, furnace, fuel, etc., was employed, as well as the time required for heating. I am of the opinion that not a single fabricator of any importance today is experiencing such costs and further that not a single customer is sustaining any such expense.

Also, as to the past experience of modern-type welding wherein stress relieving by heat is not generally employed, I know of but possibly one manufacturer who may not have provided furnace facilities for accomplishing this result. If stress relieving is not important, it certainly reflects seriously upon the judgment and policy of many fabricators who have made extensive research investigations along this line.

Insofar as the adequateness of the insurance facilities is concerned, this statement, on the fact of it, does not preclude the possibility of failure at all, and it does not follow that due to such adequateness the fabrication of vessels should therefore continue in the slip-shod, relatively speaking, manner as in the years past. I cannot say that there is such an adequateness of inspection facilities for welded construction; in fact, I believe there are only a very few companies engaged in

commercial inspection which are thoroughly competent to make a scientific, thorough inspection of present-day high-grade covered electrode welding, especially on such work as power boilers.

As a matter of fact, even some of the insurance companies' inspectors know scarcely anything when it comes to inspecting and adjudging the properties of a high-grade covered electrode weld job as such as would be used on a power boiler. Of course, the writer has in mind such fabrication where, should explosion or leakage occur, it would prove very hazardous to both life and property, while on an ordinary storage tank, where no serious hazard would result in case of failure, the welding as well as the inspection could and may properly be done by such an ordinary commonplace inspector.

The writer requests that this criticism may be accepted in a constructive manner.

Yours truly,
A. Hurtgen, Chief Metallurgist
Henry Vogt Machine Co.
Louisville, Ky.

To the foregoing, Mr. Kinkead has replied as follows:

To the Editor:

My statement:—"If the code is correct, most of the welding which has been done in the last five years should be condemned and the equipment taken out of service in the interest of safety." Mr. Hurtgen's comment:—"somewhat hasty and unjustified." Mr. Hurtgen's comment, in my opinion, is merited. Probably instead of saying "most" I should have said about 25 per cent. I had in mind not only safety to life and property but safety to profits.

A list of weld failures and their probable cost cannot, with propriety, be printed. To those who are watching weld failures with the thought in mind of steadily improving the practice so that they may be avoided, it is surprising that there have not been more failures than have been recorded. More are coming where welds have not been made under adequate procedure control.

Must Pay for Failures

My alleged statement:—"That the fundamental basis underlying all insurance is the past experience or mortality rates." I did not make this statement, as the text will show. In reference to the comments of Mr. Hurtgen in this paragraph, I believe that we are in fundamental agreement. Whenever a manufacturer puts his product in the possession of his customer, it is in effect insured. If it goes wrong he has to pay (and pay, and pay). If it is insured by an insurance company, the insurance company pays. Someone has to maintain a reserve to pay for these failures. Insurance companies are better organized than manufacturers and, in many cases, can carry the insurance for less cost than the manufacturer.

Mr. Hurtgen's comments on X-ray examination are well founded. In regard to such shadow pictures of welds around openings in the vessel, it seems to me that we must maintain a certain degree of consistency if we are to justify the public's confidence that we know what we are doing when we weld a boiler drum. If we do not know that the welded drum is safe until we make radiographs of the longitudinal and girth seams, how can we explain our conduct with reference to the welds around openings when they are the most difficult of any of the welds in the vessel to make?

To say that because the longitudinal and girth seams are such as to show proper radiographs leads to inference that the welds around the openings are perfectly safe, seems to me to be stretching it a bit. The thing we are after is to make the drum safe beyond the shadow of a reasonable doubt. There appears to be a doubt in Mr. Hurtgen's mind as to whether shadow pictures constitute convincing evidence of safety. Possibly we got off on the wrong foot in the matter of radiograph inspection. It is certainly valuable, but it is not conclusive. The public is entitled to conclusive evidence that welded boiler drums are safe.

In regard to the comments on the lime wash test, this test does not show the ductility of the metal in the weld, it is not designed to and is never used for that purpose. There are other ways by which this job is done.

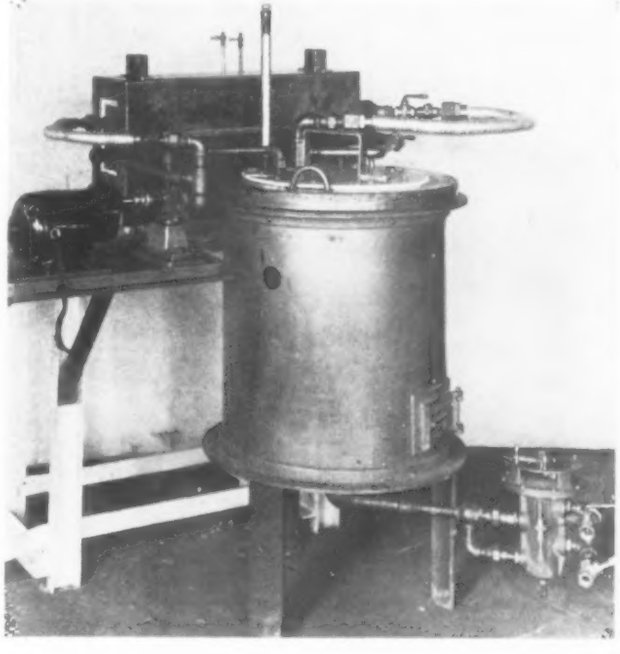
Costs Likely Under-rated

Mr. Hurtgen's objection to the cost figures given for stress relieving is not valid, in my opinion. There are two imponderables in the equation from which the cost per ton of stress relieving is obtained—the number of vessels stress relieved per year, and the rate at which the investment should be amortized. If one vessel is stress relieved per week and the investment is amortized in three years, the cost is likely to be more than $20 per ton. During the past year only one or two furnaces have been used to the extent of one charge per week. In a number of cases, $60 per ton, is too low, the cost is actually higher. The discrepancy is between engineer's figures and management figures.

There is no magic in the matter of stress relieving by heat in a furnace, it is often the only way to do it. My objection is to the mental attitude which recognizes this method as the only method. I have done a good deal

◆

DIE TEMPERING RAZOR BLADE STOCK: With this recently developed equipment for temper drawing razor blade stock as it passes through tempering dies subsequent to hardening, oil is heated by a gas burner in a separate tank unit, in the foreground, and then pumped through the dies, at the rear. Temperature of the oil is controlled by an automatic controller, the thermocouple of which is located in the oil reservoir. The circulating pump is adapted for operation at the temperatures required, usually 300 to 450 degrees Fahr. Possibilities of overshooting or over-running the desired temper drawing temperature are said to be practically eliminated. Likewise the possibilities of not maintaining the desired temperature are slight as the control functions from a point near the source of heat supply



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of it and will do a good deal more. But there are many cases in which it may be done with equal effectiveness, in my opinion, by purely mechanical means at far less cost. Operation of economic laws will draw the attention of the boiler code committee toward less expensive methods of stress relieving, where applicable, as well as to less expensive and more conclusive nodestructive tests of welded vessels.

The very purpose of the original article was to produce such comments as Mr. Hurtgen has made. They are able and constructive. We are in a mess because Class 1 code vessels cost too much to build. It is my hope that out of such discussions and comments new ideas will be born which will permit the welding fabrication of still safer vessels at lower costs.

Yours very truly
ROBERT E. KINKEAD, Consulting Engineer,
Cleveland.

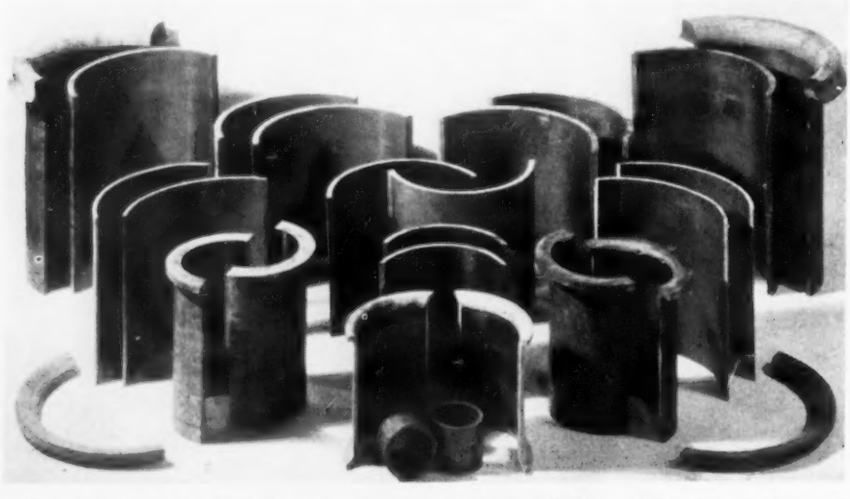
Introduces New Bearing of Synthetic Resin with Textile Base

MADE from a synthetic resin similar to bakelite and with textile material as the base, a new type of bearing recently has been introduced by Joseph T. Ryerson & Son Inc., Chicago. The strong belting textile material of the base reinforces the resinoid, which completely fills and saturates the former. The composite material then is subjected to great heat and pressure. At approximately 1-ton pressure per square inch and 340 degrees Fahr. the product sets. Physical characteristics are entirely changed and the bearing is no longer fusible or soluble. According to the manufacturer it cannot be resoftened by heat, will not absorb water or oil, and is resistant to most acids; it is, however, attacked by hot caustic alkalis.

The accompanying illustration shows a number of the Ryertex bearings, as the new product is called. In forming one of these units pressure and heat are applied to dies which form it into the exact size and type of bearing required, at the same time setting the material. The finished bearing is hard and will show a brinell hardness of 30 to 40 and scleroscope reading of 70 to 80. The bearings are claimed to be particularly satisfactory in cases where it is easier to apply water as a lubricant than oil, though they will operate satisfactorily with oil if this is desirable.

Tested on Mill Equipment

Bearings of this type have been on test in practically all of the major steel mills in these applications: Roll neck and roll table bearings in rod, strip, bar, structural, plate and blooming mills. The fact that it is difficult to keep mill bearings oiled and the fact that plenty of water is always available, is said to make this new type of bearing particularly suitable for a large number of steel mill applications. Bearings from the smallest size up to 32-inch outside diameter are successfully formed. The manufacturer states that there is a definite saving in the initial cost of the bearing, as well as a saving in greater length of service and decreased power consumption.



These bearings are formed under heat and pressure in dies. They are made from the smallest size up to 32-inch outside diameter

Announce Papers for New Products Conference

Further details are available concerning the new products conference arranged by the Cleveland Engineering society, to be held Sept. 27-29 as announced in STEEL last week. An exhibit of new products will be on display during the conference in the society's rooms in the Hanna building. The exhibit is segregated into three general classifications—inventions, noncommercial and commercial products. The keynote session of the conference will be held in the auditorium of John Hay high school Tuesday evening, Sept. 27, and is open to the public, the featured address being, "New Products —the Way Out?" by Frederick M. Feiker, director, bureau of foreign and domestic commerce, Washington. Other papers, in the order of their presentation, are as follows:

Research Session

"A New Product Program for the Manufacturer," by Zay Jeffries, consulting metallurgist, Aluminum Co. of America, Pittsburgh.

"Analyzing the Market for the New Product," by Eldridge Haynes, marketing counselor, McGraw-Hill Publishing Co., New York.

Development and Marketing Session

"Financing the Product," speaker to be announced.

"Practical Steps in Product Development," by D. G. Smellie, director of development and design, The Hoover Co., North Canton, O.

"Marketing the New Product," by Gordon Armstrong, Youngstown Pressed Steel Co., Warren, O.

Product Session

"Automobile—the Graham Car," by Floyd F. Kishline, assistant chief engineer, Graham-Paige Motors Corp., Detroit.

"Electrical Equipment," by M. R. Richardson, Electric Controller & Mfg. Co., Cleveland.

"Domestic Units—Auto-Lite Electric Clocks," by A. E. Buchenberg, vice president in charge of engineering, Electric Auto-Lite Co., Toledo, O.

"Production Machinery — New Gridley Automatic," by Tell Berna, general sales manager, National Acme Co., Cleveland.

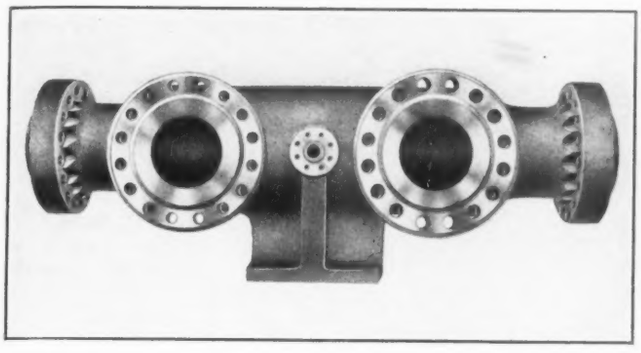
"Broader Phases of Merchandising," by Harry Tipper, advertising director, *Forbes Magazine*, New York.

"Self-Consuming" Welding Rod Is Developed

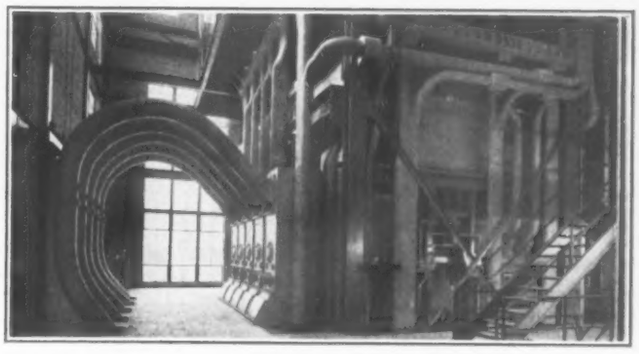
Supplementing announcement of the introduction of a new line of general purpose welding rods by the Champion Rivet Co., Cleveland, (STEEL, Sept. 12, p. 34) the company further announces the development of an automatic welding device claimed to reduce welding costs ap-

CONSULT

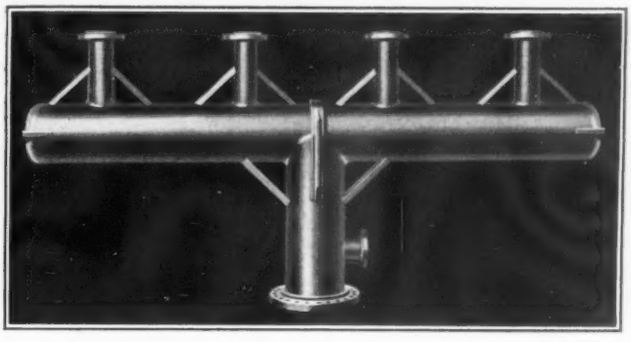
Pittsburgh Piping & Equipment Co. Concerning Your Piping Problems



12-in.—1350 lb. Cast Steel Manifold, Flanges with SARLUN facings. Made for large industrial power plant.



Accuracy and efficiency are characteristic of every Pittsburgh Piping installation.



20-in. O. D. 250 lb. Welded Header, 16 ft. long, with 1—20-in. and 5—8-in. welded necks to be installed in gas line.

36-in. Cast Iron Multiport Check Valve for use in large steel plant.

Twenty-nine years' experience manufacturing and installing piping materials in power stations, oil refineries, and industrial plants enables Pittsburgh Piping & Equipment Company to meet your specific requirements with foresight and knowledge.

Constant development of our facilities through research and service guarantees purchasers of Pittsburgh Piping products better workmanship and materials.

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preciably. The device, details of which have not yet been fully released, is said to be a simple structure consisting of arms extended from a bus bar, so arranged that as electric current passes through these arms the electrode which has been attached to the work gradually consumes itself without any effort on the part of the operator. This feature has prompted the term "self consumer" when reference is made to the machine. The Champion company states the device offers interesting possibilities in the welding of storage tanks and pressure vessels where longitudinal seams are prominent. Length of seam is no restriction in the welding operation, it is said, since with the proper arrangement of contacts, any length rod will consume itself. Under present plans the device will be demonstrated at the National Metal exposition in Buffalo, Oct. 3-7, where the company will have exhibit space.

Individual Motorpumps on Quench Tanks Effect Economies

BY EQUIPPING quench tanks with individual motorpumps, for the circulation of the quenching fluid, the heat treating department of the Ingersoll-Rand Co., Phillipsburg, N. J., has effected a major economy in its cost of operation and maintenance.

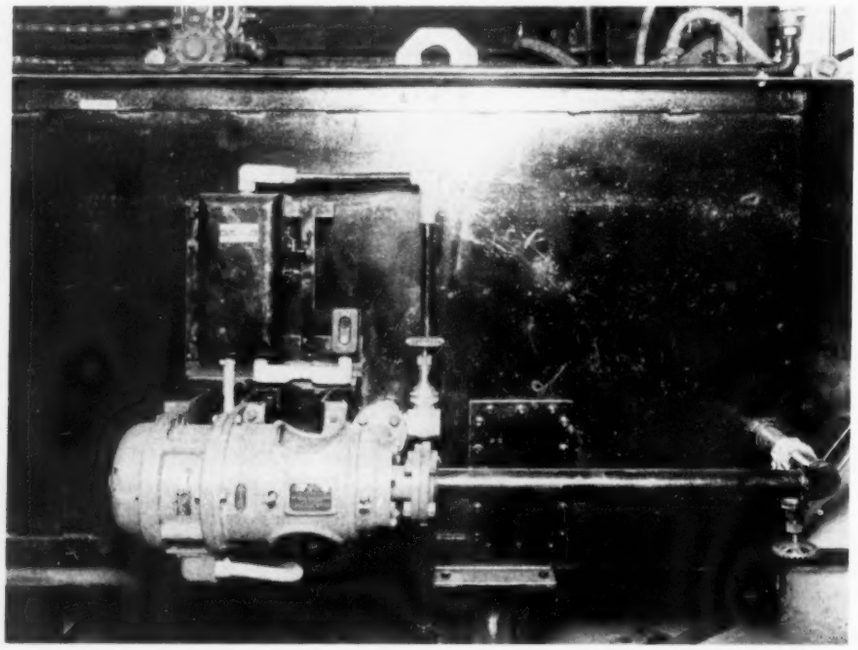
Each heating furnace at this plant is equipped with quench tanks, for oil, water or brine. Under the old system, each tank was a station on a long pipe line leading from and returning to a large central tank. The brine tank had capacity for 20,000 gallons. The oil tank had capacity for 10,000 gallons. These large central tanks were located beneath the floor of the heat treating department. When they were installed, it was necessary to blast space for them out of solid rock. Large pumps, operated by large electric motors, serving each of these central tanks, were located in deep pits, also blasted out at considerable expense. The pipe lines serving all the tanks were in underground passages covered with floor plates so as to make them easily accessible in case the necessity for repairs to the system should arise.

Waste in Central System

This former circulating system had to have sufficient capacity to serve all the tanks when the shop was running full. Since all tanks were served by a common system, the entire system had to be operated if only one tank was in service at a time. When certain quenching operations contaminated the quenching fluid, as a result of salts adhering to the work after the heat treating operation, it became necessary to renew the quenching medium throughout the system.

By equipping each tank individually with a motorpump, as shown in the accompanying illustration, the circulation in each tank is independent. By the old arrangement each tank was located permanently. Now each tank can be removed to a different location whenever desired, making it necessary to invest less money in quenching equipment. Furthermore, in the event of contamination of the quenching fluid, renewal need be made in only one quench tank.

The motorpumps used in this installation are a recently developed product of the Cameron division of the Ingersoll-Rand Co. They comprise a pump and motor, both on the same shaft and both in the same frame. The units employed in this individual circulation of quenching fluid are small ones, being equipped with 2-horsepower electric motors. These pumps are available in all sizes from ¼ to 25 horsepower for all usual current conditions including 50 and 60 cycles, single and polyphase alternating and direct current.



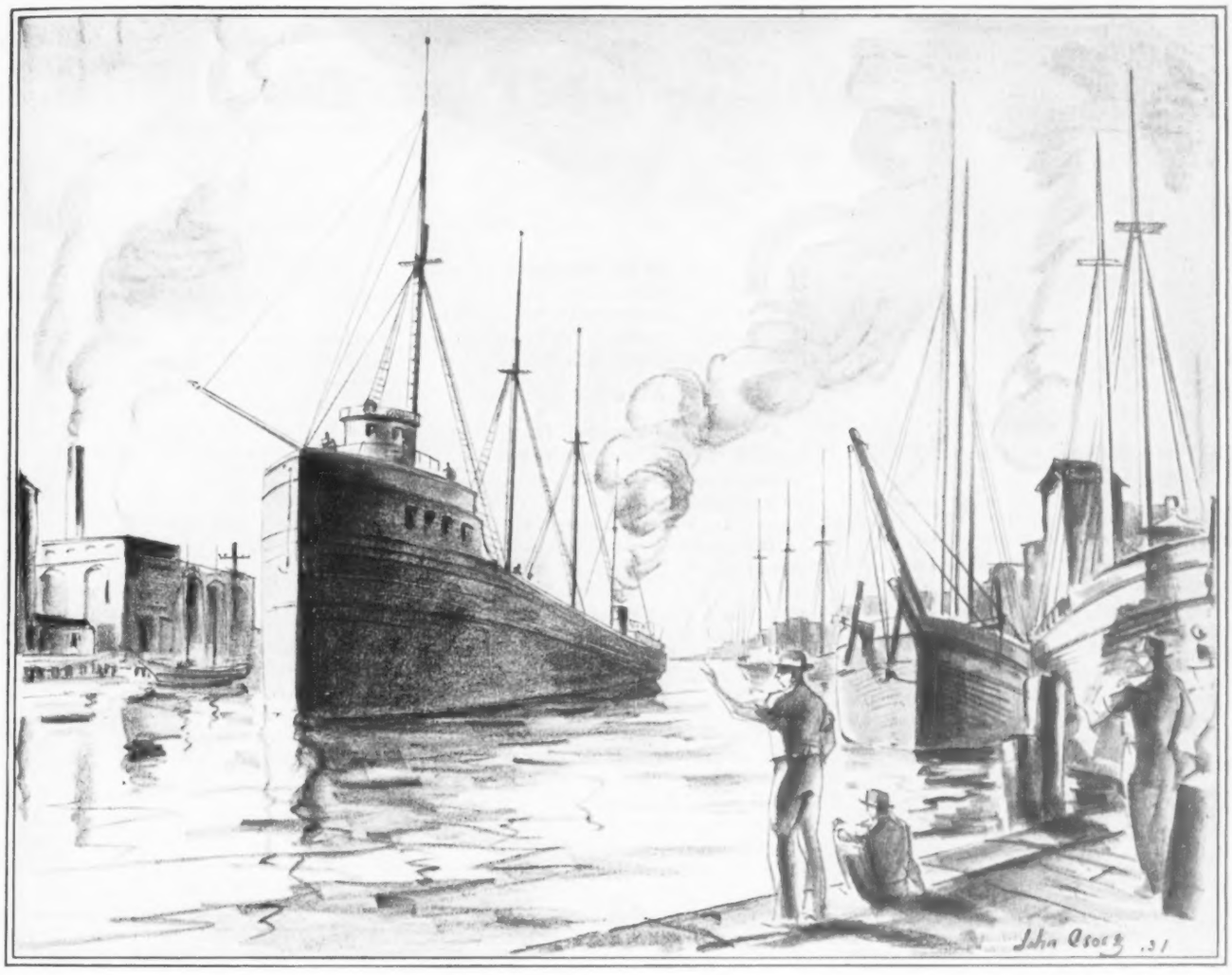
Individual motorpumps installed on a battery of quench tanks realized a saving in operation and maintenance costs over the former method of circulating the quenching fluid to all tanks from a central station

Bulletin Gives Properties Of Rubber Paints

Protective qualities of a new line of rubber paints, known as Acid-seal paints, are discussed in a recent bulletin issued by B. F. Goodrich Rubber Co., Akron, O. The paints have as a base a commercial form of rubber isomer, developed by Goodrich laboratories, which imparts valuable properties characterized as follows: Exceptional properties of adhesion when applied to a properly prepared surface; dry in one hour to a hard, firm film, but retain to a remarkable degree the elastic properties of rubber and consequently conform to the expansion and contraction of the support. Retaining the chemically resistant properties of rubber, they provide a protective coating that minimizes the corrosive action of acids, alkalies and chemical fumes. The paint film is not water absorbent.

The bulletin is in effect a manual of recommendations for paint problems and discusses rubber derivatives which minimize the corrosive action of acids and alkalies on materials. Further the bulletin deals with the selection of proper paint and primer for various purposes, methods of application, ingredients, finished results, spreads per gallon and operations in which different types of paint have been used successfully. Copies of the bulletin will be supplied on request.

IRON SHIPS AND IRON ORE



IN 1882 the Globe Iron Works at Cleveland built the Onoko, first iron ship to sail the Great Lakes, and built her to carry iron ore. ⁄ ⁄ ⁄ More than 40 years earlier iron materials had been brought overland from Pittsburgh to Erie for the building of a war vessel — the old Michigan, later re-christened the Wolverine. ⁄ ⁄ ⁄ The Onoko, built for Captain Philip Minch, was 302½ feet long, 39 feet beam and had 25 feet depth of hold. She carried 3000 tons and had eight hatches with 24 foot centers and eight feet width. ⁄ ⁄ ⁄ The Onoko proved so efficient in the ore trade that she led the way to the construction of vessels of more than twice her size and four times her carrying capacity. She sailed the lakes for thirty-one years and sank in Lake Superior on September 15, 1915. ⁄ ⁄ ⁄ By 1900 the 500-foot ore carrier had become a fact and a decade later 600 feet had been reached and passed. Only steel could have built the great ore fleet of the lakes.

Blast furnace plants operated by the Interlake Iron Corporation furnish large cargoes for ships of the Great Lakes fleets in the form of iron ore, coal, pig iron and limestone. Water transportation is only one factor in the Interlake chain making for productive efficiency, which is responsible for the quality of the company's products

INTERLAKE IRON CORPORATION

PIG IRON ⁄ COKE

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Making the Most of

METHODS AND MATERIALS

FOR some time now 18-8 chrome-nickel steel has been used for automotive wire wheel spokes and for this application is proving eminently satisfactory. The wire is furnished with a yield of about 100,000 pounds per square inch, 30 per cent elongation in 2 inches, 65 per cent reduction in area and a hardness running from Rockwell C 21 to 24. A minimum of six 90-degree bends are required. The wire is worked into nipple-type spokes and one end is subjected to a light cold heading operation. Results on the upset type of spoke in which both ends are cold worked have not been very successful; the steel required here is one which work hardens less easily.

\$ \$ \$

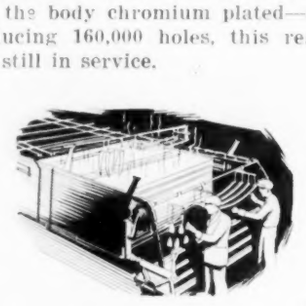
Some 14,400 steel window and door frames and casements recently were fabricated and installed in a 24-story hospital on the Pacific Coast, with use of bronze welding and the oxyacetylene blowpipe. An interesting problem arose in connection with this work. It was necessary to weld an angle iron to the window frames and also to the casings, this requiring eight tack welds on each frame and eight for each casement, making a total of 16 welds on each item. As delivered to the job, the parts were all enameled and inspectors would not permit more than ½ inch of burned enamel on the part of the casements next to the concrete walls. The inspectors believed it likely that the blowpipe would burn off more than this amount but they were willing to pass the job if this could be avoided. An oxyacetylene service operator called in for advice suggested bronze welding in a small space protected by wet asbestos fiber cement. This was tried and found to be an effective means for preventing the heat from affecting the enameled surface except at the exact spot where the bronze welding rod was applied. Since there were 600 windows and doors on each floor of the 24-story building, this involved a substantial amount of work. In all, about 2400 pounds of high-strength bronze welding rod was used.

\$ \$ \$

A new development in gas-fired immersion heating equipment is a nozzle-type burner with venturi air mixer, taking secondary air through the center of the burner in addition to that taken from around the burner as usual. Burners of this type are designed for firing into flue coils which are submerged directly in the liquid to the heat. High heat transfer efficiency is obtained.

\$ \$ \$

Because of extremely close limits allowed for valve tappet holes in cylinder blocks, plus 0.0005 and minus 0.0001 on a 0.624-inch hole, an automobile manufacturer found high-speed steel finishing reamers would produce only 1200 holes before being worn undersize. A tungsten carbide tipped reamer was tried and produced 72,000 holes within the limit, but the difficulty was that the reamer body wore down directly behind the tungsten carbide tips. A new reamer was made and the body chromium plated—after producing 160,000 holes, this reamer was still in service.



A CHROMIUM plating solution which does not require a high current density for successful plating work has been perfected in England. It is said that the solution needs from 10 to 20 amperes per square foot, works at ordinary room temperature and has a throwing power which is a revelation to chromium platers. Tubes 4 inches long and 1¼ inches diameter are plated inside and out when merely suspended loosely by a thin wire from the cathode rod. Plating can be continuous as no striking is necessary. It is understood that pieces can be taken out during the process, examined, dried and buffed, then reintroduced into the plating tank and still come out bright so as to require no finishing. The solution is perfectly stable and has long life; one bath has worked over two years. Cost of adapting existing plants to use of the process is said to be comparatively small.

\$ \$ \$

A manufacturer of a spacing machine uses magnetic clutches and solenoids to regulate automatically the travel of the table which carries the piece being processed, and in another solenoid application a cutting knife is operated as fast as 150 times per minute. Approximately 3.5 inch-pounds of energy are used per cut from a solenoid with a rating of 7.5 inch-pounds.

\$ \$ \$

Standardization of bolts and nuts saved one large machine tool manufacturer \$10,000 a year. Another large company using cap screws of 1-inch nominal size paid between \$50 and \$70 a hundred for these screws. After they had become an American standard, the price was reduced to \$9 a hundred.

\$ \$ \$

With the development of newer and stronger alloys, the applications of zinc die castings are by no means restricted. Rugged machine parts continually are being designed and made from die castings. It has been possible to produce a bench lathe, 18 inches from center to center and containing 46 castings including the gears, to retail for an exceptionally low price. The manufacturer of a 1 and 2-ton hoist has converted several more parts to this manufacturing process which makes 75 per cent of the hoist weight in zinc die castings. Automobile horn projectors developed recently have demonstrated the remarkable acoustic properties of zinc castings. The new alloys developed by one well-known zinc producer have more favorable original properties and retain them through a long period of utility; furthermore dimensional changes in the castings have been reduced to such small numbers that they are no longer of practical interest.

Scanning the Field of Technology

A Digest of Important Developments Pertaining to the Production, Processing, Application and Performance of Steel

Structure of Heat Treated Low-Carbon Steel

By Welton J. Crook and Edmund C. Babson, Metals and Alloys, August 1932, p. 183, 2 pp., 4 illusts.

Results of this investigation seem to show that the conventional theories of heat treatment apply just as well to low-carbon steels as to eutectoid or hypereutectoid steels, and suggest the following explanations of the phenomena found in the heat treatment of this steel:

Due to the effect of increased carbon content on martensite decomposition, a 0.20 per cent carbon steel gives martensitic areas consisting to some extent of tetragonal martensite when quenched between Ac_1 and about 1420 degrees Fahr.; and the same steel gives areas of troosto-martensite, or possibly troostite, when quenched between 1420 and about 1650 degrees Fahr. Thus a steel quenched from just over Ac_3, say at 1550 degrees Fahr., is to some extent troostitic—perhaps entirely so—and does not have its structure changed on drawing up to about 900 degrees Fahr., except for gradual growth of the cementite particles and gradual elimination of the acicular structure. The martensitic areas in a steel quenched from between Ac_1 and 1420 degrees Fahr. will, however, draw in the usual manner through troostite and sorbite to a spheroidized condition.

—STEEL, 9-26-32

Polishing Furnishes Varied Artistic Effects

Abrasive Industry, October 1932, p. 14, 1 p., 2 illusts.

With ever-increasing use of chromium plating and chrome alloy metals in many industries and for ornamental work in architectures, polishing and finishing of metals are recognized as important factors. Common polishing materials include various grades of emery, silicon carbide, silica, lime, tripoli, aluminum oxides, rouge, etc. Each of these materials is available in varying degrees and combinations of hardness and size of grain, either separately or combined with waxes, stearic acid, tallow, various oils and greases.

Next in importance to choosing the correct cutting and finishing material for a given job is the selection of the proper wheel. The large number of designs and shapes to be polished usually requires a size range of wheels flexible enough to enable the lathe operator to reach all surfaces. The variety of color tones that may be obtained in the final finish offers a great many opportunities to the manufacturer or plater willing to experiment with the numerous prepared finishing compositions on the market today.

—STEEL, 9-26-32

Safe Loading of Steel Products Into Boats

By P. M. McArdle and A. V. Berquist, in Blast Furnace and Steel Plant, August 1932, p. 646, 2 pp., 1 illust.

Loading of steel into boats, where it cannot be handled directly from cars due to design of equipment, requires ingenuity in the transformation of equipment in order to stock on dock to facilitate loading in the least possible time, since time with ships is an important factor. It also facilitates safe loading from dock to hold of ship, as a spilled lift would mean damage to the bottom of the ship, delay in loading and the cost of repairing property damage by the shipper as well as the possible loss of life. Additional factors are the loading of the ship in a manner which would prevent shifting of cargo at sea, and consideration of the expeditious and safe unloading at destination necessary to produce a satisfied customer. Problems involved in the loading of pig iron, billets, skelp and plates into ships are described and methods for overcoming them outlined.

—STEEL, 9-26-32

Equilibrium Studies of Periclase and Iron Oxide

By Henry G. Fisk and William J. McCaughey, bulletin No. 70, engineering experiment station of Ohio State university, Columbus, O., 44 pp., 13 illusts., 19 tables.

Basic open-hearth slags usually contain from 20 to 45 per cent iron oxide, and because this iron oxide is uncombined with silica, the slag is corrosive to most refractories. Calcined magnesite and dolomite, both of which contain considerable free magnesium oxide, offer unusually high resistance to such slags. This investigation of the effect of iron oxide on periclase, into which MgO is converted at high temperatures, should have value in explaining the resistance of basic open-hearth bottoms to slag corrosion.

Magnesia in the form of periclase offers peculiar advantages for use in basic open-hearth steel furnaces. It has a melting temperature of 2800 degrees Cent., the highest melting temperature of the common refractory oxides, and a high specific gravity of over 3.6 which would resist the floating action of the metal bath. Its hardness of 6 (equal to cold steel) would enable it to resist abrasion. Its most valuable properties, however, are chemical: It has a low solubility in basic open-hearth slags and it possesses the property of absorbing several times its own weight of iron oxide without seriously impairing its use as a refractory. Despite the fact that at the high temperatures of the open hearth magnesite refractories do not possess great strength, largely because of a gradual softening of the bond, this softening is not harmful in the hearth of a furnace, but on the other hand, produces a valuable pyroplastic property in the refractory which enables it to become knitted into a single unit and permits ready incorporation of magnesite or dolomite as a patching material when holes develop.

—STEEL, 9-26-32

Determination of Molybdenum In Ores and Steels

By H. B Knowles, bureau of standards research paper No. 453, 7 pp., 3 tables.

Presents method for the determination of molybdenum in any considerable amount require a number of tedious and time-consuming operations prior to the actual determination of that element. Alpha-benzoinoxime, advocated as being specific for copper, has been found to precipitate molybdenum quantitatively and to isolate it from most of the more commonly encountered elements. As a result of the present study a procedure has been developed by which molybdenum can be determined in ores, steels and other products in much less time than by present methods and with all the accuracy of the best methods now in use.

—STEEL, 9-26-32

Modern Beam Arch Construction Made this a Better Field House

Field House, University of Chicago: Length, 374'-2". Width, 168'-2". Height to top of beam at center, 68'-0". Architects, Holabird & Root. Associate architect, Emery B. Jackson.

THE new Field House at the University of Chicago illustrates clearly some of the advantages of the special Beam Arch — as developed by the American Bridge Company — over the conventional arch truss construction. Larger clearances, both vertically and horizontally, for a specified roof height, or lessened height of sides and gables for specified clearances, will be recognized as an economy having importance in assembly halls, gymnasiums, rinks, hangars, and other buildings where large unobstructed space is required. Full information and estimates will be supplied on request.

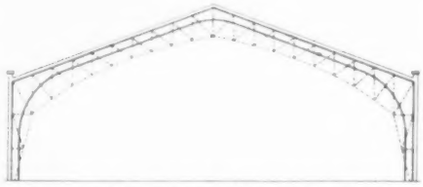


Diagram No. 1. For specified height of roof, increased side and vertical clearances.

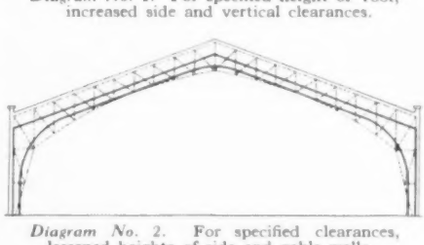


Diagram No. 2. For specified clearances, lessened heights of side and gable walls.

Fabricators and Erectors of all classes of Steel Structures: Bridges, Buildings, Towers, Sub-stations, Barges, Turntables

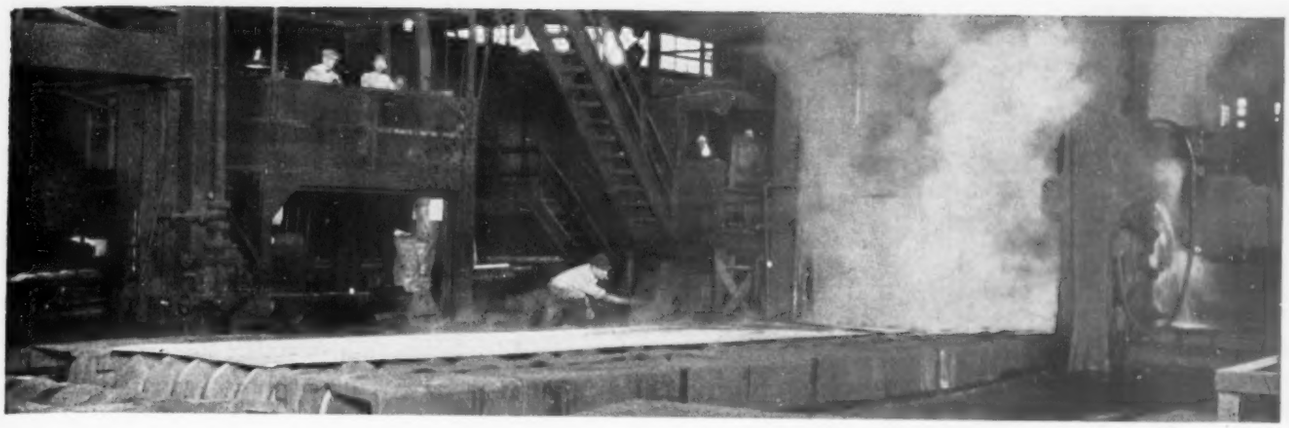
AMERICAN BRIDGE COMPANY

General Offices: Frick Building, Pittsburgh, Pa.

SUBSIDIARY OF UNITED STATES STEEL CORPORATION

Contracting Offices: Baltimore, Boston, Chicago, Cincinnati, Cleveland, Denver, Detroit, Duluth, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, Salt Lake City.

Pacific Coast Distributors: COLUMBIA STEEL COMPANY, San Francisco, Los Angeles, Portland, Seattle.
Export Distributors: UNITED STATES STEEL PRODUCTS COMPANY, New York, N. Y.



PROGRESS IN STEELMAKING

MAINTENANCE cost of pig machine operation at a plant in the Great Lakes district has been reduced $3000 annually by the installation of a mechanical device near the discharge end of the mold strand. Every time a mold passes beneath the device a chisel strikes between the end of the pig and mold wall, prying the pig loose and assuring immediate release of the chilled metal as the mold passes over the sprocket at the discharge end.

STRAIGHT tapping holes are of utmost importance for equalizing the amount of steel flowing into two ladles at open-hearth shops using the bifurcated spout. When the hole is out of line the stream of metal is split in the desired proportion by lowering a short stopper rod in the runner either vertically or sidewise.

♦ ♦ ♦

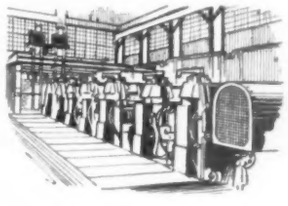
Because of its low thermal value, 6 cubic feet of blast furnace gas must be delivered to by-product coke plants for each cubic foot of coke oven gas released for other heating purposes. At one plant near the Pittsburgh district using blast furnace gas to underfire by-product coke ovens, the mains through which the gas is transmitted from the stack to the ovens, is six times the area of that used to convey the by-product gas from the ovens to the various heating furnaces in the rolling mill departments.

♦ ♦ ♦

Cored buckets on each end of a vertical drive, which receive stock from the rod mill and lay it up in regular layers as a coil, are the basis of a newly developed rod reel. When the rod is used up, the entire coiling assembly is rotated 180 degrees thus providing an empty bucket for the oncoming rod. The dual reel is self-discharging, operates continuously and requires no stripper or kickoff.

♦ ♦ ♦

Storage batteries of industrial lift trucks are changed by a unique method used at a tin mill in the Pittsburgh district, the operation being performed by one man with little effort. A table equipped with rollers is built with its top at the same height as the battery cradle in the truck. The cradle also is provided with rollers installed in a framework attached to an eccentric cam. The framework and its rollers are raised by throwing a lever and the battery pushed from the truck to the receiving table. After the truck is moved forward and a fully charged battery rolled on the cradle, the lever is thrown in the opposite direction which permits the battery to rest on an angle iron framework. By this arrangement the change of batteries is effected in about 3 minutes.



ACTUAL field tests show that phenolic laminated fabric mill bearings effect a reduction of 10 to 25 per cent in the kilowatt hour per ton energy consumption and a 20 to 37 per cent saving in the rolling peak load due to lower coefficient of friction, compared with conventional-type bearings. A continuous rod mill in the Pittsburgh district equipped with this type bearing at a total cost of $8872, reports a savings of $14,400 in power costs during a year of low output.

♦ ♦ ♦

Substantial savings have been effected at the babbitt shop of a western steel company by equipping the heat control of the babbitt furnaces with a tork clock. By this arrangement the current for heating the furnaces is switched on 4 or 5 hours before the day turn starts, thus rendering the metal available for use when the operator arrives.

DETERMINING the proper cross sectional shape of ingot molds, according to the practice of one maker, is contingent upon whether open or killed steel is made; whether the ingots are to be forged or rolled; upon the type, condition and capacity of heating furnaces; upon the type of blooming mill and contour of rolls; whether the ingots are to have the ultimate in soundness, solidity or fine surface; and, whether the product will justify and the management be satisfied with comparatively high mold cost.

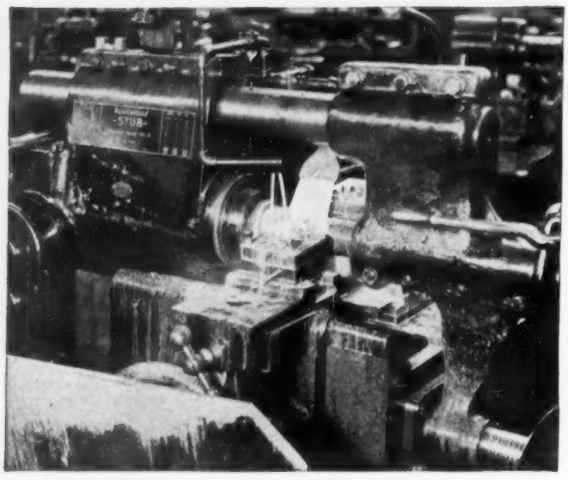
♦ ♦ ♦

Replacing gas burners of the premix type with luminous flame burners on three continuous heating furnaces at an Ohio plant has effected a fuel savings of 15 per cent and improved the quality of the steel heated.

♦ ♦ ♦

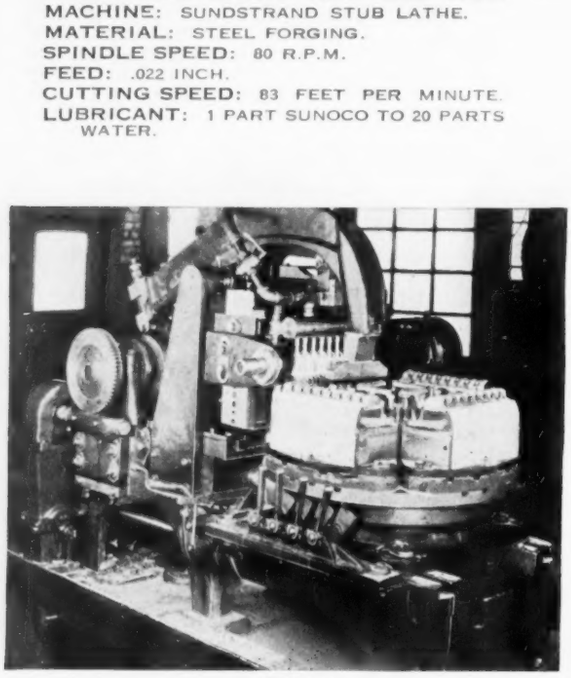
Laminated fabric mill bearings lubricated with tallow have less static friction than brass bearings under the same load carrying conditions, according to recent tests.

ACTION, ACCURACY,



Courtesy of National Acme Company, Cleveland, Ohio

OPERATION: ROUGH TURN AND FACE.
MACHINE: SUNDSTRAND STUB LATHE.
MATERIAL: STEEL FORGING.
SPINDLE SPEED: 80 R.P.M.
FEED: .022 INCH.
CUTTING SPEED: 83 FEET PER MINUTE.
LUBRICANT: 1 PART SUNOCO TO 20 PARTS WATER.



Courtesy of The Producto Machine Company, Bridgeport, Conn.

OPERATION: MILLING VEE GROOVE IN INTERCHANGEABLE CIRCULAR SAW TEETH.
MACHINE: PRODUCTO NO. 50
MATERIAL: TOOL STEEL FORGING.
WIDTH OF GROOVE: 3-16 INCH.
LENGTH OF GROOVE: 1⅝ INCH.
CUTTER: 2½ INCH DIAMETER.
SPEED: 192 R.P.M.
FEED: .030 INCH.
LUBRICANT: 1 PART SUNOCO TO 20 PARTS WATER.

The production machine tool of tomorrow will be purchased, not on design and appearance, but on results obtained, and the yield on the capital invested.

But in order that these machine tools may function to the full extent of their rated capacity, it is necessary that they have simplified and effective tooling, the application of the proper speeds and feeds, and a cutting lubricant that will insure the production of accurate, quality finished parts with long runs between tool grinds.

The influence that the cutting lubricant exerts on both the amount of production and the cost of production cannot be overemphasized. It is an important factor in machine tool efficiency.

Sunoco will aid your machines in maintaining their rated efficiency. In many operations the production of finished parts on your lathes, drill presses, millers, and other machine tools will show an increase. The

SUN OIL COMPANY,
SUN OIL COMPANY, LTD., Montreal, Canada.

SUN
EMULSIFYING
Made by the producers of

Akron, Albany, Allentown, Atlantic City, Baltimore, Battle Creek, Beaumont, ton, Detroit, Flint, Grand Rapids, Harrisburg, Jackson, (Mich.), Jacksonville, Reading, Rochester, Scranton - Wilkes Barre, Syracuse, Tampa, Toledo,

AND ECONOMY . . . .

adaptability of Sunoco to faster machine operation encourages the use of higher spindle speeds. Sunoco will also assist your machine tools in producing work with greater accuracy and improved finish. Longer tool life between grinds will reduce your down time to a minimum.

With Sunoco, speed of cut, freedom from glazing, increased wheel life, less heat, and minimum distortion of work and perfection of finish, plus greater production are evidenced in the grinding operations.

Sunoco is hygienic, and even after prolonged use, bacteriological tests prove that it will not develop pus forming germs or pathogens which cause skin inflammation.

We welcome an opportunity to demonstrate the merits of Sunoco where it should be demonstrated—in your own plant, under your own operating conditions.

PHILADELPHIA, U.S.A.

BRITISH SUN OIL CO., LTD., London, England

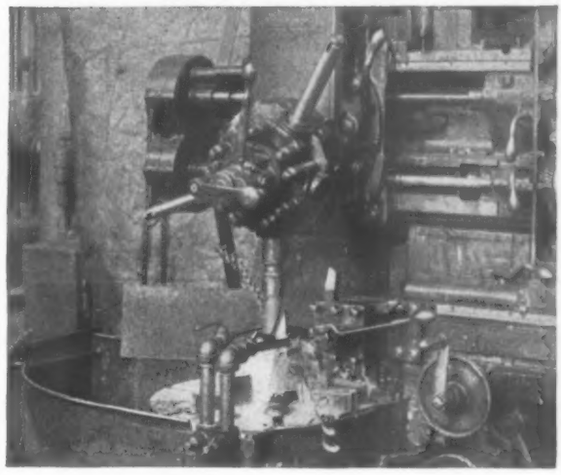
OCO

CUTTING OIL

BLUE SUNOCO MOTOR FUEL

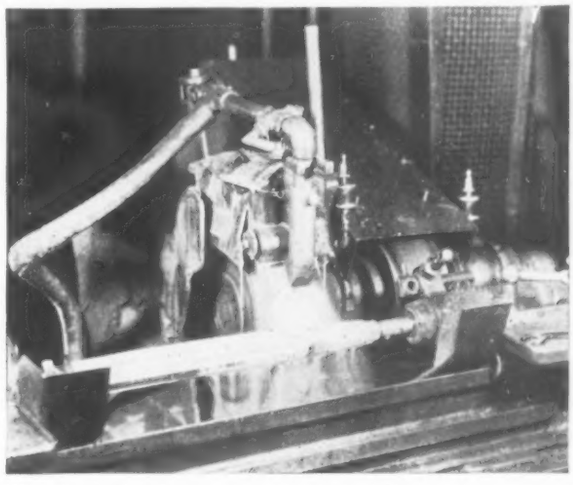
Bridgeport, Buffalo, Chicago, Cincinnati, Cleveland, Columbus, Dallas, Day-Miami, Montreal, Newark, New York, Philadelphia, Pittsburgh, Providence, Toronto, Trenton, Tulsa, Wilmington, Youngstown, and London, England.

Courtesy of The Bullard Company, Bridgeport, Conn.



OPERATION: DRILLING AND TURNING PINION.
MACHINE: BULLARD VERTICAL TURRET LATHE.
MATERIAL: CHROME NICKEL STEEL.
SPEED: 85 FEET PER MINUTE. 70 R. P. M.
FEED OF DRILL: .007 INCH PER REV. $2\frac{1}{4}$ INCH DRILL.
BEVEL SWEEP: .014 PER REV.
LUBRICANT: 1 PART SUNOCO TO 20 PARTS WATER.

Courtesy of Autocar Company, Ardmore, Pa.



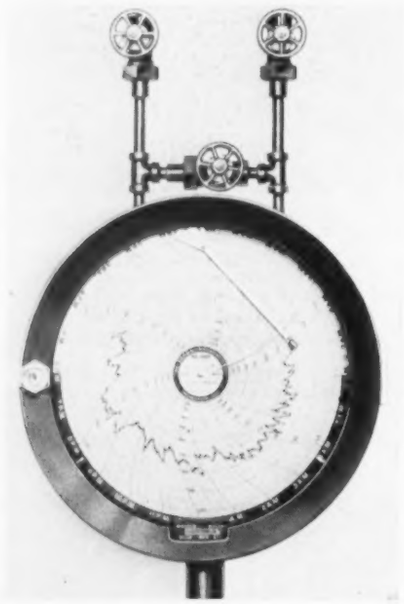
OPERATION: GRINDING TAPER ON MAIN SHAFT.
MACHINE: NO. 11 BROWN & SHARPE.
MATERIAL: 5% NICKEL STEEL
WHEEL SPEED: 1900 R. P. M.
WHEEL DIAMETER: 14 INCHES.
PRODUCTION: 40 PIECES PER HOUR.
LUBRICANT: 1 PART SUNOCO TO 40 PARTS WATER.

NEW EQUIPMENT

PRODUCTION FABRICATION TREATMENT FINISHING

Series of Mechanical Flow Meters Developed

Brown Instrument Co., Philadelphia, has rounded out its line of fluid measuring instruments by the addition of a series of mechanical flow meters. The new line is featured by a simple direct lever-actuating mechanism, by a large powerful float, a pressure-tight bearing with grease reservoir, a series of range tubes that



Brown flow meter representative of entire new line

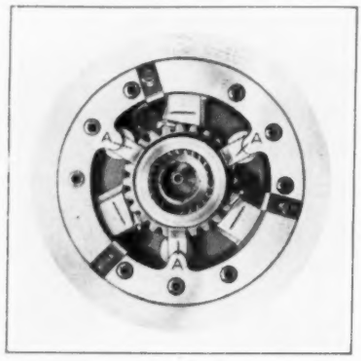
permit changing the range of the meter without disturbing the orifice, and by a type of construction and assembly whereby the manometer may be taken apart and cleaned in the field without altering the calibration.

The model depicted in the accompanying illustration is representative of the entire new line. Mechanism of the instrument is built into a die cast aluminum case.

◆

Designs Chuck for Grinding, Boring Spiral Gears

City Machine & Tool Works, East Third at June, Dayton, O., recently developed a chuck designed specifically for spiral gears. The principal features include the elimination of spiral gear cocking during loading and chucking, and at the same time



Bolender chuck developed by City Machine &Tool Works

assurance of positive concentricity in the boring or grinding operation.

The device is loaded in the conventional manner, the teeth contacting the locating pins. When the operator releases the drawbar three fingers are brought into position automatically across the front face of the gear as shown above.

◆

Sheet Leveler Embodies 17 Straightening Rollers

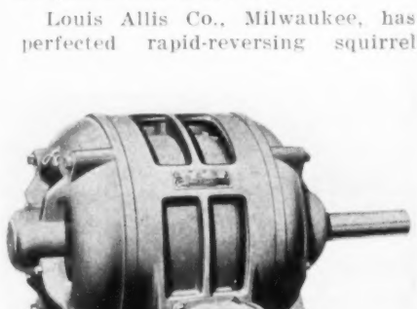
A new type of Ungerer sheet leveler developed and manufactured in Germany is to be introduced by J. I. Bernitz, 47 West street, New York, as importer and sole agent in the United States and Canada. Recently associated with Mr. Bernitz in the sale of this equipment is George R. Roemer, formerly chief engineer, Continental Steel Co., Kokomo, Ind., and now an industrial engineer, with offices at the same address.

The machine, shown in the accompanying illustration, is said to be a departure from the more conventional design of roller leveler and hydraulic stretcher levelers. There is a total of 17 straightening rollers in the unit, nine on the bottom and eight on the top; also an adjustment with a series of 38 backing-up rolls for the top and bottom-straightening rolls. The backing-up rolls which come up underneath the bottom straightening rolls have an adjustment that concave or convex the bottom straightening rolls.

◆

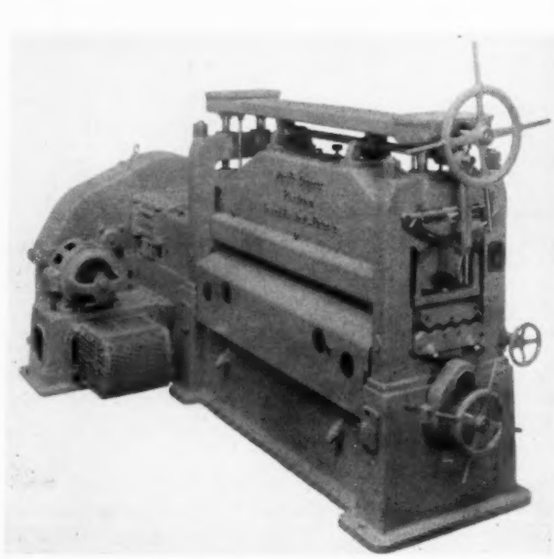
Squirrel Cage Motors Are Rapid Reversing Type

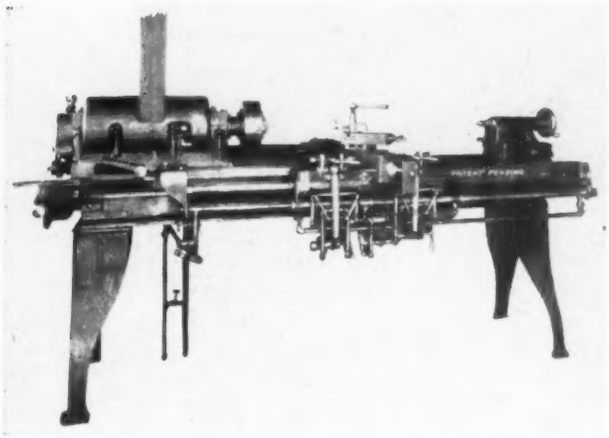
Louis Allis Co., Milwaukee, has perfected rapid-reversing squirrel



Above—Louis Allis motor designed to be reversed rapidly

SHEET leveler manufactured in Germany and introduced in this country by J. I. Bernitz. A leading sheet producer recently purchased one of these machines, while tests are being conducted by several other American producers. The design is a departure from the more conventional employed in roller and hydraulic stretcher levelers





SCREW cutting precision device designed by Leo F. Collins and Wesley Langer. Construction is simple and installation may be effected in a minimum of time. It can be adjusted to operate on any standard make of lathe. The complete control is contained in one compact unit, integral with the carriage

cage motors capable of as many as 60 reversals per minute continuously without overheating. The rates of reversals have been made practical through light weight rotor construction, redesigned ventilation, high-torque characteristics, and shock-resisting frames.

The line includes the standard open ball bearing type and the rolled shell shaftless type, shown herewith. The motors are available in vertical, single speed, multispeed, enclosed fan-cooled and squirrel cage types. No auxiliary ventilation is needed in sizes up to 5 horsepower.

◆

A. C. Starters are Water And Dust Tight

Industrial Controller division, Square D Co., Milwaukee, has added to its line of starters alternating-current combination starters of water and dust-tight construction in the cast iron type. The apparatus is intended for installation in damp or dusty locations and corrosive atmospheres. This equipment is not explosion proof, however.

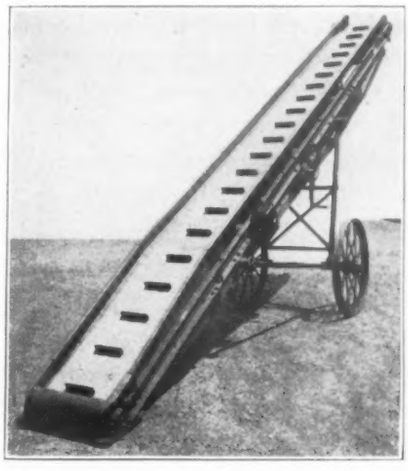
The unit consists of an across-the-line starter, motor control switch and test jack. Thermal overload protection and low voltage protection are provided. Starters are built in two sizes known as class 8532S and 8536S and can be furnished fusible or nonfusible.

◆

Announces New Portable Belt Conveyor

Link-Belt Co., Philadelphia, recently introduced a new portable belt conveyor embodying numerous improvements over last year's model. Among other features it incorporates fixed steel retaining sides extending the entire length of the conveyor, thus preventing lumps from spilling over the sides of the belt at any point.

To obviate a common source of trouble experienced with portable belt conveyors of this general type, the foot end has been improved to keep the material away from the return run of the conveyor belt. An-



New portable belt conveyor built by Link-Belt Co.

other feature is the new arrangement of the foot end plate, permitting the use of the machine without this plate, when desired, minimizing labor in feeding and serving to speed up loading. The improved unit is shown in the accompanying illustration.

◆

Design Precision Device For Lathe Control

Leo F. Collins and Wesley Langer, Seattle, have embodied seven major improvements in a screw cutting precision device designed for lathe control by hydraulic attachment. The principal purpose of the control, depicted in the accompanying illustration, is to double or treble the output of any ordinary screw cutting lathe, either for short jobs or mass production.

The master micrometer is one of the main features. Back lash is eliminated and no hand wheels require attention. On the return stroke the automatic offset upsets the tool so there is no scraping of the material and no danger of damaging the job. Another important achievement is reversible control for internal cutting.

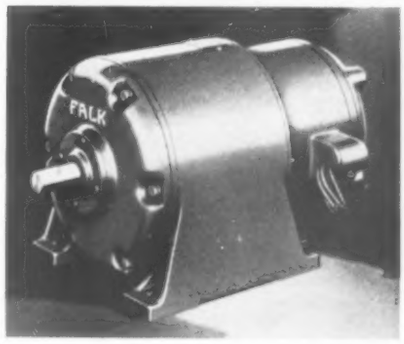
◆

Builds Combination Motor And Speed Reducer

Falk Corp., Milwaukee, announces three styles of "Motoreducers," combined motor and speed reducer, which represent a departure from previous practice. These units retain all the advantages of separate motors and speed reducers and, at the same time, give increased compactness, simplicity and economy. The integral type assembled complete with motor is shown in the accompanying illustration.

The gear housing in every case acts as support for the motor, thus assuring the necessary rigidity. In the integral type the motor end bell is removed and the motor close coupled through a bayonet type of joint to the gear case, while in the flexible type the round frame type of motor is used and the end bell retained. In the all-motor type any standard horizontal type motor may be used, the motor being connected through a flexible coupling to reducer housing.

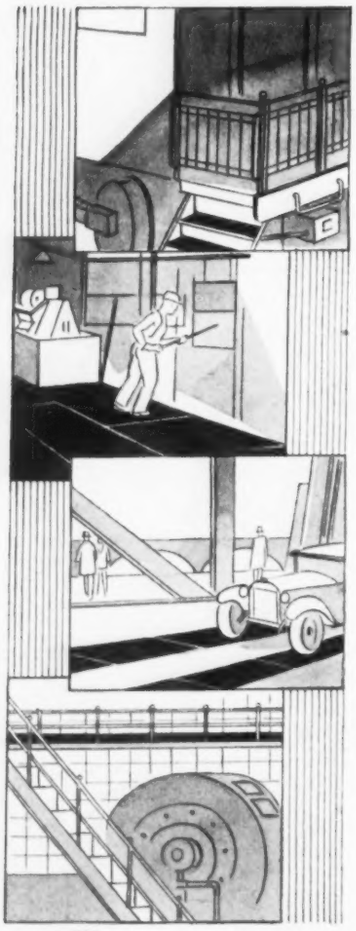
All three types are supplied in horsepowers from ¾ to 75, with



Falk integral type Motoreducer assembled complete with motor

ratios from 4.6 to 288. Nonplanetary, helical-type gears of special make are used throughout. Bearings are oversize ball type in all but the larger sizes.

WHERE FEET MUST NOT SLIP



110 deaths, 7 permanent total disabilities, 3617 permanent partial disabilities, 23,324 temporary disabilities with a loss of 545,114 weeks time and $6,313,520 in compensations, is what industry in one state paid for falls on *level* surfaces in three years. A frightful cost, particularly since the greater percentage of these accidents could have been prevented by proper floor protection!

Carnegie Floor Plate provides the necessary safeguard for boiler room and industrial flooring, stair treads, sidewalk doors and openings, elevated platforms, traffic treads on bridges, and for any and all service where a safe foothold is required.

Carnegie Floor Plate is the improved, raised pattern type with a sufficient raised contact area to furnish a satisfactory bearing surface and to insure long life, comfortable walking and high resistance to slipping.

Where feet *must not slip,* install Carnegie Floor Plate — an investment where returns may be figured in terms of human life as well as in dollars.

CARNEGIE STEEL COMPANY • PITTSBURGH

Subsidiary of United States Steel Corporation

194

CARNEGIE

FLOOR PLATE

Encouraging Gain in Small Orders for Steel

Rise to 17 Per Cent in Production Accompanies Broader Interest in Markets—Users Would Cover Ahead—Heavier Orders for Scrap and Pig Iron—Prices Steady

SHAKING off the mild reaction of a week ago, the iron and steel industry has rallied the most conclusive evidence yet of active market strength and has resumed its forward march in production.

Up two points to 17 per cent, steel production in the week ended Sept. 24 was the highest since late June. While Youngstown mills were expanding three points, eastern Pennsylvania two and Pittsburgh one, other districts were holding their own.

If tentative schedules for this week are followed, a further gain in operations is assured. It now appears reasonably certain that the September daily average steel rate will exceed August, and probably also July.

Even more encouraging to producers is the fact that an expansion in the number of individual orders has cut across practically every district and product. Between Sept. 20 and 23 many producers passed their August total of bookings, largely because of numerous small commitments.

Considering that August was so poor, this does not connote a noteworthy improvement in tonnage, but it is taken to indicate a wider participation in the market. There is evident not only a necessity for a little more steel but also a widespread desire by consumers to put the strength of their requirements behind the apparent upward movement in general business.

To no small extent has the more stable price situation bred confidence. Many consumers are seeking protection well into 1933, typical being the effort of two large automotive buyers of bolts and nuts in attempting to cover for the first half. The new $5 forging quality extra has stood the test of 400 tons in the past week. Wrought pipe has been advanced several dollars a ton. Irregularities persist, especially in some flat rolled lines, but mills increasingly are less inclined to make concessions.

This betterment in the steel situation, however, still leaves this branch of the industry in the wake of the raw materials, as the latter also have made gains. American Radiator & Standard Sanitary Corp., usually regarded as a close buyer, has covered on 50,000 tons of pig iron through the first half. All pig iron markets report larger bookings, with sales of foreign iron in New England totaling 6000 tons.

With few exceptions, steel producers appear avid for scrap and offerings are snapped up. The United States Steel Corp., which a few weeks ago bought 50,000 tons for its Pittsburgh and Youngstown mills, has closed on 20,000 tons for Lorain, O. A Buffalo mill has committed for 5000 tons. Prices, however, are not rising and appear likely to stand until actual consumption expands commensurately with the recent bulge in the market.

Only in connection with projects publicly financed do steel requirements attain tonnage proportions. Quickening the structural industry are army and navy programs, involving $12,500,000. Structural orders last week, at 9499 tons, were below the 1932 weekly average, but an offset is the large volume nearing the award stage. Placement of 2400 tons for an auditorium at St. Louis lifts reinforcing concrete bar bookings to 8317 tons, highest for any week this year.

A federal loan will release 10,000 to 30,000 tons of steel for 1285 Pennsylvania railroad freight cars. An eastern road contemplates buying 100 automobile cars. Chicago Great Western is inquiring for 25 caboose underframes. A slight pickup in steel shipments to automobile manufacturers is noted, and further improvement in October is certain.

The favorable balance in iron and steel foreign trade almost disappeared in August, when imports rose 5618 tons to 23,623 tons and exports declined 19,603 tons to 32,955 tons.

STEEL's composites are unchanged this week, iron and steel at $29.32, finished steel at $47.50, and scrap at $7.12.

Composite Market Averages

	Sept. 24	Sept. 17	One Month Ago Aug., 1932	Three Months Ago June, 1932	One Year Ago Sept., 1931	Ten Years Ago Sept., 1922
Iron and Steel Composite	$29.32	$29.32	$29.32	$29.54	$31.03	$43.79
Finished Steel Composite	47.50	47.50	47.46	47.64	48.72	58.82
Steelworks Scrap Composite.....	7.12	6.96	6.25	6.62	8.82	17.30

Iron and Steel Composite:—Pig iron, billets, slabs, sheet bars, wire rods, tin plate, nails, sheets, plates, shapes, bars. Finished Steel Composite:—Plates, shapes, bars, hot strip, nails, tin plate, pipe. Steelworks Scrap Composite:—Melting steel, compressed sheets.

COMPARATIVE PRICES OF IRON, STEEL AND COKE

Representative Market Figures for Current Week, Last Month, Three Months and One Year Ago

	Sept. 24, 1932	Aug., 1932	June, 1932	Sept., 1931
Pig Iron				
Bessemer, del., Pittsburgh	$15.76	15.76	15.95	18.26
Basic, valley	14.00	14.00	14.50	17.00
Basic, eastern, del., eastern Pa.	13.75	13.90	14.50	16.65
No. 2 foundry, del. Pittsburgh	15.76	15.76	16.01	18.26
No. 2 foundry, Chicago	15.50	15.50	16.00	17.50
*Southern No. 2, Birmingham	11.00	11.00	11.00	12.00
**No. 2X, Virginia furnace	17.75	17.75	18.00	18.15
**No. 2X, Eastern del. Phila.	14.26	14.51	14.76	17.26
Malleable, valley	14.50	14.50	14.50	17.00
Malleable, Chicago	15.50	15.50	16.00	17.50
Lake Superior, charcoal, del. Chi.	23.04	23.04	23.04	25.54
Gray forge, del. Pittsburgh	15.63	15.63	15.63	17.63
Ferromanganese, del. Pittsburgh	73.24	73.24	74.99	89.79

*1.75-2.25 silicon. For local delivery. Northern shipments based on $10, Birmingham. **2.25-2.75 silicon.

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c per gross ton, beginning Jan. 4, 1932.

Coke				
Connellsville, furnace, ovens	2.00	2.00	2.00	2.40
Connellsville foundry, ovens	2.75	2.90	3.00	3.25
Semifinished Material				
Sheet bars, open-hearth, Youngs.	26.00	26.00	26.00	29.00
Sheet bars, open-hearth, Pitts.	26.00	26.00	26.00	29.00
Billets, open-hearth, Pittsburgh	26.00	26.00	26.00	29.00
Wire rods, Pittsburgh	37.00	37.00	37.00	35.00

	Sept. 24, 1932	Aug., 1932	June, 1932	Sept., 1931
Finished Material				
Steel bars, Pittsburgh	1.60	1.60	1.60	1.60
Steel bars, Chicago	1.70	1.70	1.70	1.70
Steel bars, Philadelphia	1.91	1.91	1.91	1.89
Iron bars, Chicago	1.65	1.65	1.65	1.70
Shapes, Pittsburgh	1.60	1.60	1.60	1.60
Shapes, Philadelphia	1.75	1.75	1.75	1.76
Shapes, Chicago	1.70	1.70	1.70	1.70
Tank plates, Pittsburgh	1.60	1.60	1.60	1.60
Tank plates, Philadelphia	1.79½	1.79½	1.79½	1.80½
Tank plates, Chicago	1.70	1.70	1.70	1.70
Sheets, No. 10 blue anneal., Pitts.	1.70	1.70	1.70	1.85
Sheets, No. 24, hot ann., Pitts.	1.10	2.15	2.20	2.40
Sheets, No. 24, galvan., Pitts.	2.75	2.80	2.85	2.90
Sheets, No. 10 blue anneal., Chi.	1.85	1.85	1.85	2.00
Sheets, No. 24, hot ann., Chi.	2.25	2.35	2.35	2.55
Sheets, No. 24 galvan., Chi.	2.90	3.00	3.00	3.05
Plain wire, Pittsburgh	2.20	2.20	2.20	2.20
Wire nails, Pittsburgh	1.95	1.95	1.95	1.90
Tin plate, per base box, Pitts.	4.75	4.75	4.75	5.00
Scrap				
Heavy melting steel, Pitts.	$9.75	8.55	9.00	10.80
Heavy melting steel, eastern Pa.	7.25	6.50	6.25	8.75
Heavy melting steel, Chicago	6.00	5.40	5.60	7.95
No. 1 wrought, eastern Pa.	7.25	6.35	6.25	9.75
No. 1 wrought, Chicago	5.25	4.00	4.75	8.00
Rails for rolling, Chicago	7.25	6.50	7.75	10.50

Sheets

Volume Is Increasing—Motor-car Purchases Still Light—Mills Seeking to Firm Up Prices

SHEET PRICES, PAGE 43

Pittsburgh—The growing number of small sheet orders is noteworthy, compared with a month or two ago. Tonnage has been increasing since the first of the month, due to greater diversification of orders. Present demand is chiefly for jobbing, roofing and miscellaneous purposes. Little automotive buying is noted. Price schedules call for a 2.85c quotation on galvanized, although the Cincinnati market still is unsettled where barge rates are considered against rail. The base for black sheets is 2.20c, with cold-rolled quotations nominal in view of the absence of automotive specifications.

New York—Sheet demand has improved, due primarily to actual needs. It is upon a continuance of this improvement that sellers base hope for a firmer market. At present they appear willing to book business to Oct. 1 at prices under those announced for fourth quarter. In most instances, however, they require that shipments be made not later than Oct. 15.

Philadelphia—Sheet sellers are endeavoring to establish firmly by Oct. 1 the official prices which prevailed at the beginning of this quarter. On current specifications, prices continue unsettled. According to an unconfirmed report, 200 tons of cold-finished sheets are pending for a local consumer. Allegheny Steel Co., Brackenridge, Pa., is low on 74,300 pounds full cold-rolled, pickled, re-annealed and resquared sheets for the Norfolk, Va., navy yard, at $2427, delivered; bids Sept. 20.

Youngstown, O.—Increasing orders from miscellaneous consumers have led to better mill operations.

The gain in new business is reflected in black, galvanized and full-finished. It is interpreted as a forerunner of better conditions. Quotations appear fairly steady, No. 24, hot-rolled annealed are 2.10c to 2.20c, Pittsburgh; galvanized, 2.75c to 2.85c; autobody, 2.80c to 2.90c.

Cleveland—If Chevrolet, Buick and others are to bring out new models by Nov. 1 some buying of automotive sheets must be done by the close of September, but so far only the barest routine requirements from these sources are apparent, in this market. Demand for sheets for washing manufacturers, relatively, is the best of that from any consuming group. These manufacturers are producing more, and reports indicate their business in the last four months of this year will be double that of the preceding four months. Refrigerator and furniture outlets are not active; barrelmakers are taking little. Jobbers are replenishing stocks, especially galvanized. Sheetmakers want to strengthen the market for fourth quarter; new concessions are less frequent, and a determination toward firmness is more apparent. Makers are impressing on consumers that concession prices will not be extended beyond Oct. 1.

Cincinnati—Better buying for automotive interests has resulted in slightly higher production schedules at district sheet mills.

Chicago—Sheet demand is slow to expand. Automotive interests are expected to be better buyers within the next few weeks. Roofing material is moving slowly to agricultural districts, and improvement in demands from miscellaneous consumers involves only small lots. The market usually is quoted 2.30c, base, for hot-rolled annealed sheets, and 2.95c for galvanized.

St. Louis—Reports of extensive preparations for freight car repairs by western trunk lines lead sheetmakers here to anticipate better demand from that source. Requirements for public works are expanding.

Sierra Magnesite Co. Ltd., Gustine, Merced county, Calif., is shipping from a large deposit of magnesite.

CURRENT FINISHED STEEL PRICES

Delivered prices subject to freight surcharge corrected to nearest ½c. Asterisk denotes price change this week

Steel Sheets

HOT ROLLED No. 10

(24 to 48 inches wide)

Pittsburgh, base	1.55c
Gary, Ind. Harbor, base	1.65c
Chicago, delivered	1.70c
New York, delivered	1.90c
Birmingham, base	1.70c
Philadelphia, delivered	1.86c

BLUE ANNEALED NO. 9-10

Pittsburgh, base	1.70c
Chicago, district mills	1.80c
Chicago, delivered	1.85c
Philadelphia, delivered	2.01c
New York, delivered	2.05c
St. Louis, delivered	2.07½c
Birmingham, base	1.85c
San Francisco c.i.f.	2.32½c

HOT ROLLED ANNEALED NO. 24

Pittsburgh, base	2.10c to 2.20c
Gary, Ind. Harbor, base	2.20c to 2.30c
Chicago, delivered	2.25c to 2.35c
New York, delivered	2.45c to 2.55c
Philadelphia, del.	2.41c to 2.55c
Birmingham, base	2.35c
St. Louis, delivered	2.47½c to 2.57½c
San Francisco, c.i.f.	2.85c
Detroit, delivered	2.18½c

GALVANIZED NO. 24

Pittsburgh, base	2.75c to 2.85c
Gary, Ind. Harbor, base	2.85c to 2.95c
Chicago, delivered	2.90c to 3.00c
Philadelphia, delivered	3.06c to 3.16c
New York, delivered	3.10c to 3.20c
Birmingham, base	3.00c
St. Louis, delivered	3.12½c to 3.22½c
San Francisco, c.i.f.	3.50c

AUTOBODY NO. 20

Pittsburgh, base	2.70c to 2.80c

FURNITURE

Pittsburgh, No. 10 heavy	2.55c to 2.65c
Pittsburgh, No. 20 light	3.05c to 3.15c

TIN MILL BLACK NO. 28

Pittsburgh, base	2.40c to 2.50c
Gary, base	2.50c to 2.60c
St. Louis, delivered	2.77½c

HEAVY COLD ROLLED NO. 10

Pittsburgh, base	2.15c to 2.25c
Gary, Ind. Harbor, base	2.25c to 2.35c
Chicago, delivered	2.30c to 2.40c
Philadelphia, delivered	2.46c to 2.56c
New York, delivered	2.60c
St. Louis, delivered	2.62½c

COLD ROLLED NO. 20

Pittsburgh, base	2.65c to 2.75c
Gary, Ind. Harbor, base	2.75c to 2.85c
Chicago, delivered	2.80c to 2.90c
Philadelphia, delivered	2.96c to 3.06c
New York, delivered	3.00c to 3.10c
St. Louis, delivered	3.12½c to 3.22½c

Wire Products

(Prices apply on straight carloads. Mixed and joint carloads take 10 cents higher price; pool carloads 25-cent advance; less carloads 40-cent advance.)

F.o.b. mills, 100 lb. keg

Standard wire nails	$1.95
Cement coated nails	1.95
Galvanized nails	3.95

(Per pound)

Polished staples	2.50c
Galvanized staples	2.75c
Barbed wire, gal.	2.60c
Annealed fence wire	2.35c
Galvanized wire	2.80c
Woven wire fencing (9-11 ga.)	$55.00
(12½ ga. and lighter)	$60.00

(To Manufacturing Trade)

Plain wire, 6-9 gage	2.20c
Spring wire	3.20c

Chicago and Anderson, Ind., $1 over Pitts.-Cleve.; Duluth and Worcester, $2 higher; Fairfield, Ala., $3 higher.

Steel Plates

Pittsburgh, base	1.60c
Philadelphia, delivered	1.79½c
New York, delivered	1.90c
Boston, delivered	2.02c
Buffalo, delivered	1.85½c
Chicago, base	1.70c
Cleveland, delivered	1.78½c
Birmingham, Ala., base	1.75c
Coatesville, Pa., base	1.70c
Pacific Coast, c.i.f.	2.00c
St. Louis, delivered	1.97½c

Structural Shapes

Pittsburgh, base	1.60c
Philadelphia, delivered	1.75c
New York, delivered	1.87c
Boston, delivered	2.00½c
Chicago, base	1.70c
Cleveland, delivered	1.78½c
Lackawanna, N. Y., base	1.70c
Birmingham, Ala., base	1.75c
Pacific Coast, c.i.f.	2.10c
Do., wide flange	2.20c

Bars

SOFT STEEL

Pittsburgh, base	1.60c
Chicago, base	1.70c
Birmingham, Ala., base	1.75c
Lackawanna, N. Y., base	1.70c
Pacific Coast, c.i.f.	2.00c
Cleveland, base	1.65c
Philadelphia, delivered	1.91c
New York, delivered	1.95c
Boston, delivered	2.02c
Pittsburgh, cold finish	1.75c
Pittsburgh, forg. qual.	1.85c
San Francisco, c.i.f.	2.10c

RAIL STEEL

Chicago Heights	1.50c
*Eastern mills	1.20c to 1.30c

IRON

Chicago, base	1.60c
*New York, delivered	1.85c to 1.90c
*Philadelphia, delivered	1.81c to 1.86c
Pittsburgh, refined	2.70c to 4.20c

REINFORCING

Pitts., billet cut lengths	1.75c
Pitts., stock lengths, mill	1.60c
Chicago, billet	1.60c to 1.75c
Chicago, rail steel	1.30c to 1.45c
*Philadelphia, cut lengths	1.86c
Cleveland, cut lengths	1.75c

Cold-Finished Bars, Shafting

Base, Pittsburgh

10,000 to 19,999 pounds	1.70c
20,000 to 59,999 pounds	1.65c
60,000 to 99,999 pounds	1.60c
100,000 pounds and over	1.57½c

Chicago, Cleveland, Buffalo 5c higher; Detroit, 20c; eastern Michigan 25c

Corrosion, Heat Resist. Alloys

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel Sheets, 35c; plates, 31c; bars, 28c.

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	21c	22.5c	25c	30c
Sheets	26c	27.5c	30c	35c
Hot Strip	19c	20.5c	23c	28c
Cold Strip	25c	26.5c	29c	34c

Carbon 0.12 and under; no nickel. A has chrome 15% and under. B over 15/18% inc., C over 18/23% inc., D over 23/30%.

Tin and Terne Plate

Per 100-pound box, Pittsburgh

Tin plate, coke base, cont.	$4.75
Tin plate, coke base, stock	3.85
Long ternes, 24, unassorted	2.80c

Gary, Ind., base 10 cents higher

Alloy Steel

Hot Rolled—F.o.b. Mills

Hot rolled; base 2.45c to 2.65c, mills; differentials to various consumers

S.A.E.	Alloy Diff.	4600 .20 to .30 Mo. 1.25-1.75 Ni.	1.05
2000	0.25	5100 .80 - 1.10	
2100	0.55	Cr.	0.45
2300	1.50	51.00 Cr.	
2500	2.25	spring	0.20
3100	0.55	6100 bars	1.20
3200	1.35	6100 Spring	0.95
3300	3.80	Cr., Ni., Van.	1.50
3400	3.20	Carbon van.	0.95
4100 .15 to .25 Mo.	0.50	9250 (flats)	0.25
		9250 (rds., sq.)	0.50

Strip, Hoops, Bands

Hot-rolled strip up to 23 15/16 in. wide, Pitts.	1.45c
Do., Chicago	1.55c
Do., del. Philadelphia	1.76c to 1.81c
Do., del. New York	1.80c to 1.85c
Cooperage hoop, Pitts.	1.55c to 1.60c
Do., Chicago	1.65c to 1.70c
Cold-roll, strip, Pitts., Cleve.	2.00c
Worcester, 3 tons over	2.20c

Rivets, Wrought Washers

Struc., c.l., Pitts.-Cleve.	2.25c
Struc., c.l., Chicago	2.35c
7/16-in. and smaller, Pitts., Chicago, Cleveland	70, 10 and 5 off
Washers, c.l., Pitts. dist.	$6.50 to 6.75 off
Do., Chicago district	7.00 to 7.50 off

Rails, Track Material

Standard rails, mill	$43.00
Relay rails, Pitts., 20 to 45 lbs.	$21.00 to 23.00
50 to 75	18.00 to 20.00
80 to 100	23.00 to 25.00
Light rails, 25-45, mills	$32.00
Light rails, Chicago	$34.00
Angle bars, mills	2.75c
Spikes, railroad, mills	2.60c
Spikes, boat, barge, Pitts.	2.75c
Track bolts, Chicago	3.50c
do., standard, jobbers	73 off list
Tie plates, mills	$37.00

Bolts and Nuts

Pittsburgh, Cleveland, Birmingham, Chi. Discounts to legitimate jobbing or large consuming trade for full-case lots apply to May 10, 1930, lists.

CARRIAGE BOLTS

All sizes, cut thread 75 off
Rolled thread ⅜ x 6 and smaller take 10 per cent lower list.
Eagle list 75 off

MACHINE BOLTS

All sizes, cut thread, lag screws, plow bolts, Nos. 1-2-3-7 heads, tap bolts, blank bolts, stud bolts without nuts 75 off
Tire bolts 60 and 10 off
Stove bolts, 77½, 25 and 10 off in pkgs.; 86 off in bulk.
Rolled thread machine bolts, ⅜ x 6 and smaller take 10 per cent lower list.

NUTS

Semifinished 75 off

HEXAGON CAP SCREWS

Milled 80-25 off
Upset 1 in. diam. and smaller 80-25-10 off

SQUARE HEAD SET SCREWS

Upset, 1 in. and smaller 75-10-10 off
Headless set screws 75-10 off
Upset, larger than 1 in. 75-10 off

Cut Nails, Chain, Piling

Cut nails, c.l. Pittsburgh	$2.50
Do., less carloads, 5 kegs or over	$2.90
Less than 5 kegs	$3.05
Chain, BB, BBB, 9/16-1½ in.	33 1/3 off
Steel sheet piling, Pitts.	1.90c

Bars

Mills Find Orders Give Slightly Better Production — General Users Furnish Increase

BAR PRICES, PAGE 43

Chicago—While steel bar orders have increased so far this month over the August volume, improvement has been too small to be particularly significant. Better demand is coming principally from miscellaneous consumers, although a small increase is noted in requirements of automotive interests. Additional gains from the latter group are expected over the next several weeks. Consumption by farm implement builders also is expected to be heavier next month. Little tonnage is moving for railroad use. Prices are receiving little test, continuing at recent levels of 1.70c, Chicago, for soft steel, 1.50c for rail steel, and 1.60c for bar iron.

Philadelphia — Commercial steel bars are moving slowly at 1.60c, Pittsburgh, and common iron bars at 1.50c to 1.55c, Pittsburgh. In neither case does there appear to be sufficient tonnage to afford a real test.

Pittsburgh—Test has been given the new forging bar extra when a user in the Detroit district bought over 400 tons of forging bars last week and paid the prescribed $5 per ton extra for guaranteed forging quality. Another Michigan interest placed an order for almost 500 tons of alloy bars last week. Carbon steel bar demand is a shade more improved, but bar mill operations showed a more pronounced gain last week when an accumulation of orders was rolled at the valley mill of the leading interest. A disturbing price situation continues from the presence of a fairly large tonnage of angles overhanging the bar market. Prices in the main continue firm, with 1.60c adhered to on carbon rounds and bar shapes and 2.65c the alloy market.

Youngstown, O. — A somewhat broader demand for common steel bars is manifesting itself, partly from agricultural implement makers and motor truck builders, but more especially from miscellaneous lines. Quotations on soft steel bars hold firmly at 1.60c, Pittsburgh.

Republic Steel Corp. is low on 148 tons of soft steel bars, mostly flats and rounds, for Panama with a bid of $4756.13 delivered, bids Sept. 16.

Cleveland — Automotive requirements are represented in current steel bar orders, but miscellaneous tonnage far outweighs automotive, whereas the latter usually absorbs 50 to 60 per cent of the total. Recently automotive business has been down to 10 per cent of the volume, though the general average for the week is higher. Bar sales for the month so far exceed those for all of August. Railroads also are light buyers at present. A considerable portion of the demand comes from agricultural implement manufacturers, cold-rollers and for manufacture into boiler tubes and oil country goods. Bars are firm at 1.65c, base, Cleveland.

Cold-Finished Bookings Exceed Previous Months

Cold Finished Prices, Page 43

Pittsburgh—Widely diversified orders for cold-finished steel bars and shafting are increasing September bookings considerably over the entire months of August and July. September promises to be the highest since March. The market is devoid of much automotive tonnage and is finding its chief support in this gain from varied sources. Firmness is noted in the price of 1.70c, minimum, with full extras being obtained.

Tin Plate Operations Raised to 40 Per Cent

Tin Plate Prices, Page 43

Pittsburgh—On a grouping of orders by the leading interest, tin plate operations rose five to ten points last week to an average of 40 per cent. Price announcement for 1933 will be forthcoming probably about mid-November. Occasional spot carloads are said to develop prices at variance with the $4.75 official base box quotation, but the chief demand for lower levels has been from canners and not the canmakers.

Plates

Larger Railroad Buying Expected Soon—Bids on Pontoons Below Government Estimate

PLATE PRICES, PAGE 43

New York—Plate buying has improved. The Jersey Central railroad was a recent purchaser, and several other railroads are figuring on quarterly requirements. Prospective oil work includes a $500,000 refinery for the Gulf Refining Co., Staten Island, N. Y. The usual carload price is 1.70c, base, Coatesville, Pa. For erection at Cavite, P. I., the navy is closing Oct. 11 on two 17,600-barrel fuel oil tanks, requiring a substantial tonnage of steel plates.

Boston—Plate buying holds to the recent moderate rate with indications of expansion. Railroad car shops are planning to increase schedules, while a fair volume of business is being taken by some boiler and small tank fabricators. Price shading has not disappeared.

Philadelphia—Prospective railroad work continues the center of interest in the plate market, with requirements of the Reading and the Pennsylvania likely to be placed in the near future. Approximately 2500 tons of plates may also be required for caissons for the new customs house, Chestnut and Second streets, Philadelphia, on which specifications are expected out Oct. 1. The caissons will involve approximately 50,000 feet of 18-inch steel pipe, 1½-inch shell. The usual carlot price is 1.70c, Coatesville, subject to concessions on preferential tonnage.

Pittsburgh—Eight bidders competed for 260 tons involved in 14 pipe pontoons for the Memphis, Tenn., engineers. Bid of the St. Louis Structural Steel Co., St. Louis, was accepted. All bids were less than the government estimate; the lowest, approximately half the estimate. Midland Barge Co., Midland, Pa., has taken about 225 tons in discharge pipe for the United States engineers at the same point. The 40 pontoons to be bid Sept. 26, for the St. Louis federal engineers, will take approximately 900 tons of steel plates in addition to 4720 feet of 20-inch steel pipe. Pittsburgh-Des Moines Steel Co. has closed on 193 tons of plates for a 500,000-gallon elevated steel tank for Fargo, N. Dak. Small orders for plates are figuring prominently in mill business. The base is generally 1.60c, Pittsburgh.

Cleveland—Approximately 1000 tons of 7/16-inch plates will be required to be fabricated into 36-inch pipe, for Cleveland's Ridge road

water main extension, bids to be asked this week. General inquiry and small orders for plates continue to increase moderately. Heavy plate construction appears to dominate, mainly for tanks, stills and pressure vessels. Builders of road machinery and power shovels have been recent purchasers. Warren City Tank & Boiler Co., Warren, O., booked an oil tank for Cities Service Refining Co., Boston, to take 245 tons of plates. The market is steady at 1.60c, base, Pittsburgh, which some mills are extending into fourth quarter.

Chicago—Plate demand for railroad consumption and tank building is lagging, with prospects for improved activity still uncertain. Little business in large diameter pipe is looked for in the near future. Plates are nominally unchanged at 1.70c, Chicago.

Contracts Placed

260 tons, 14 pipe pontoons, United States engineers, Memphis, Tenn., to St. Louis Structural Steel Co., St. Louis.

245 tons, tank, Cities Service Refining Co., Boston, to Warren City Tank & Boiler Co., Warren, O.

225 tons, discharge pipe for United States engineers, Memphis, Tenn.; to Midland Barge Co., Midland, Pa.

200 tons, water pipe, Montreal, Que., to Walsh's Holyoke Steam Boiler Works, Holyoke, Mass.

193 tons, 500,000-gallon elevated steel tanks, Fargo, N. Dak., to Pittsburgh-Des Moines Steel Co., Pittsburgh. Noted as unstated tonnage to same fabricator in STEEL, Sept. 19.

Contracts Pending

2500 tons, 18-inch pipe caissons, United States custom house, Philadelphia; specifications expected about Oct. 1.

1000 tons, 7/16-inch, for 36-inch pipe, Ridge road water main extension, Cleveland; bids to be called for this week.

775 tons, pontoon pipe for United States engineers; bids to be opened shortly; 425 tons for St. Louis, and 350 tons for Memphis, Tenn.

Unstated tonnage 85 steel tanks for storing helium gas under high pressure, bureau of yards and docks, Washington, for Sunnyvale, Calif. Work also includes piping and reinforced concrete structure to house tanks.

Unstated tonnage, 50,000-gallon elevated cylindrical tank, Hoffman island, New York; bids Oct. 3, engineer, New York.

Fluorspar Demand Light

Fluorspar Prices, Page 50

New York—With steelmaking operations light, fluorspar demand continues to respond to seasonal influences. Normally an improvement sets in about this time, reaching its peak around the latter part of November. Imported fluorspar appears largely nominal at $18.50 duty paid, per gross ton.

Railroads

Reconstruction Loans Revitalize Railroad Buying—Needs Not Yet Definite

TRACK MATERIAL PRICES, PAGE 43

Philadelphia—Interest is focused on requirements of the Reading and the Pennsylvania railroads, the latter having been recently granted a $2,000,000 government loan for the construction of 1285 steel box cars. Estimates of the steel required range from less than 10,000 to approximately 30,000 tons. But until the Pennsylvania makes definite announcement as to certain of its plans, including the possible use of old underframes and trucks, no accurate estimate will be available. The Reading continues to study costs before arriving definitely at a decision as to whether it will sublet certain of the work on the repair of 3800 freight cars to car builders, do the work entirely in its own shops, including the fabricating, or let out the fabrication to car builders or steel companies with the view to their placing the material in its own shops for assembly. Approximately, 2800 tons of steel plates are involved in work yet to be decided upon, with a smaller tonnage for repairs to 78 locomotives.

Baltimore & Ohio will open bids about Sept. 27 on quarterly requirements of plates, shapes, bars and sheets. How much tonnage may be specified is still indefinite. So far this year Baltimore & Ohio has specified little, although obtaining protections each quarter.

Boston—For freight car and locomotive repairs, the New York, New Haven & Hartford railroad has applied to the Reconstruction Finance Corp. for a $700,000 loan, the work to be done at the Readville, Mass., shops.

New York—An eastern railroad not identified with those recently obtaining loans from the Reconstruction Finance Corp. is planning construction of 100 automobile cars in addition to making a substantial number of repairs. An eastern railroad has placed 2000 light-weight freight car wheels in the Pittsburgh district. A supply house has awarded 1000 tons of rails to a Pittsburgh mill. Chicago Great Western railroad is inquiring for 25 caboose underframes. National Railways of Mexico is inquiring for 15 express and 14 passenger cars. Norfolk & Western railroad will close Oct. 5 at Roanoke, Va., on fourth quarter requirements of steel locomotive tires.

Bids will be opened this week on fourth quarter steel requirements by the New York Central, Lackawanna, New York, New Haven & Hartford and Lehigh Valley railroads.

Pittsburgh — The Pennsylvania railroad will allocate work on the construction of 1285 box cars among its Altoona, Pa., Enola, Pa., and Pitcairn, Pa., shops. The Reconstruction Finance Corp. recently granted the road $2,000,000 to proceed with this work. A large tonnage of plates, channels, angles and other car shapes will be required, although the tonnage is an estimate as yet because no inquiry for steel has been issued. A light gage of plates is expected to be specified as the work is to be for box cars and a few automobile cars. The gage thickness may run to as light as a sheet size in some instances. Some reclaimed underframes, wheels, axles and trucks may be used.

Other railroad steel buying continues negligible and there is so little tonnage that the market on spikes and tie plates is nominal. The Reading is proceeding with its car repair program and has been buying some steel. Light rails have not been sold for some time and the lack of a market makes the $32 price nominal.

Cleveland—Some fairly good orders have been placed recently for steel ties and rails for installation at mines. Sellers still find it difficult to obtain releases of railroad material long on mill books and new buying has not yet developed.

Wellman Engineering Co. is low on four railroad-type chasses for the naval air station, Lakehurst, N. J.

Chicago—Steel purchases by railroads still consist almost entirely of material needed for imperative work. The volume of such orders is little changed and inquiry points to no material increase in the near future. Rail releases are absent and shipments of track fastenings are light. Car repair work is at a low rate, although steel mills derive some encouragement from recent expansion in freight traffic, necessitating the use of additional rolling equipment. Rail and some bridge steel will be required by the Denver & Rio Grande Western railroad for construction of the 42-mile Dotsero cut-off in Eagle county, Colo., for which work the Reconstruction Finance Corp. has approved a loan of $3,850,000.

Structural Shapes

Navy and Army $12,500,000 Construction Programs To Call for Large Steel Tonnages—New Inquiry in East Increases, but Week's Total Awards Are Lighter

STRUCTURAL SHAPE PRICES, PAGE 43

Washington—The navy will start shortly on a $10,000,000 miscellaneous construction program, requiring a substantial tonnage of steel, including shapes. The army will open bids in October on a $2,500,000 construction program, for various posts, also requiring considerable steel.

New York—Led by 2173 tons for a bridge over the Hackensack river, Rutherford-Secaucus, N. J., and a substantial tonnage for the Norfolk, Va., postoffice, new inquiry in the East is slightly heavier. A large volume depends on financing, including several housing projects taking about 4500 tons. More than 6500 tons are active for New Jersey bridges. Actual awards are light.

An inquiry is expected out shortly for 1000 tons of sheet steel piling for a private project.

Boston—Structural lettings are light, but heavier tonnage is active, including state bridges for which several thousand tons will be required.

Pittsburgh—Numerous small postoffices in Pennsylvania constitute the largest inquiry. Plans are going through on five large government dams which will take about 5000 tons of sheet piling for temporary installation. These dams are at Mississippi, Ohio and Allegheny river points. A large tonnage of structural material in form of angles, channels and other shapes will be bought by the Pennsylvania railroad for building 1285 box cars. Erection is going ahead on the 15,000-ton Pittsburgh postoffice, tied up by a strike for the past two months. Plain shapes are 1.60c, base.

Cleveland—Shape awards here are restricted to small lots. Competition appears keener for these jobs.

Chicago—Structural awards are fairly numerous, principally state bridges. About 2400 tons have been awarded in Wisconsin, while new inquiries involve several thousand tons. Action is expected shortly on several buildings for the Exposition of Progress, totaling more than 1000 tons. Plain material continues 1.70c, Chicago.

Birmingham, Ala.—Fabricating shops are maintaining 4 and 5-day week operations, but not with full complements of men.

Contracts Placed

2400 tons, bridges, Pepin county, Wisconsin; 1050 tons to Worden-Allen Co., Milwaukee; 640 tons to Industrial Contracting Co., Minneapolis; 610 tons to American Bridge Co., Pittsburgh; and 100 tons to Minneapolis Bridge Co., Minneapolis.

1500 tons, work for Sinclair Refining Co., Kansas City and Coffeyville, Kans., distributed to several fabricators.

600 tons, grade separation work, Kenosha, Wis., and Eddy county, New Mexico, to American Bridge Co., Pittsburgh.

440 tons, bridge, Meehoopany, Pa., to McClintic-Marshall Corp., Bethlehem, Pa.

300 tons, girls' high school, Philadelphia, to Lehigh Structural Steel Co.

300 tons, Erie railroad bridge, Owego, N. Y., to American Bridge Co., Pittsburgh.

300 tons, gymnasium, University of Maine, Orono, Me., to Boston Bridge Works Inc., Boston.

275 tons, state bridges near Hoover, Murray county, Oklahoma, to Kansas City Structural Steel Co., Kansas City, Mo.; Kelliher Construction Co., Little Rock, Ark., and Dallas, contractor. Sheffield Steel Corp., Kansas City, awarded 45 tons reinforcing steel.

275 tons, state bridge, Warrior river, Alabama, to Virginia Bridge & Iron Co., Roanoke, Va.

270 tons, highway bridges, West Virginia; 120 tons to McClintic-Marshall Corp., Bethlehem, Pa.; 80 tons to American Bridge Co., and 70 tons to Pittsburgh-Des Moines Steel Co., Pittsburgh.

250 tons, highway bridge, Spencer county, Kentucky, to Pittsburgh-Des Moines Steel Co., Pittsburgh.

220 tons, operators' houses, Ogden avenue bridge, Chicago, to Reuter Bros., Chicago.

206 tons, highway bridge, Halsted, Minn., to Illinois Steel Bridge Co., Jacksonville, Ill.

200 tons, St. Louis negro city hospital, to Superior Structural Steel Co., St. Louis.

200 tons, grade separation, Milwaukee, to Milwaukee Bridge Co., Milwaukee.

200 tons, state bridges, Johnston and Emanuel counties, Georgia, to Virginia Bridge & Iron Co., Roanoke, Va., W. F. Scott, Thomasville, Ga., general contractor.

190 tons, highway bridge, Perry county, Kentucky, to Pittsburgh-Des Moines Steel Co., Pittsburgh.

168 tons, 12 pontoons, United States engineers' office, Memphis, Tenn., to St. Louis Structural Steel Co., St. Louis.

160 tons, highway bridge, Springboro, Pa., to McClintic-Marshall Corp., Bethlehem, Pa.

150 tons, sheet steel piling for Ann Arbor railroad, subsidiary of Wabash, to Kalman Steel Corp., St. Louis.

150 tons, state highway bridge, West Virginia, to McClintic-Marshall Corp., Bethlehem, Pa.

140 tons, bridge, Magdalena, N. Mex., to American Bridge Co., Pittsburgh.

140 tons, warehouse for Six Companies, Boulder City, Nev., to Consolidated Steel Corp., Los Angeles.

130 tons, highway bridge, Missouri, to Stupp Bros. Bridge & Iron Co., St. Louis.

125 tons, twin bridge replacement, Cromwell - Middletown, Conn., to American Bridge Co., Pittsburgh; L. E. Laughlin, New London, general contractor.

110 tons, Harrison school, Washington, 65 shapes to Dietrich Bros., Baltimore, 45 reinforcing bars to Capital Fireproof Products Corp., Rosslyn, Va.; Culbertson & Kelly Co., Washington, contractor.

116 tons, highway bridge, Lafayette county, Missouri, to McClintic-Marshall Corp., Bethlehem, Pa.; previously reported to Mississippi Valley Structural Steel Co.

100 tons, highway bridge, Marathon county, Wisconsin, to Wisconsin Bridge & Iron Co., Milwaukee.

Unstated tonnage, armory, Vancouver, B. C., to Western Bridge Co. Ltd., Vancouver, B. C.

Awards Compared

	Tons
Awards, week ended Sept. 24	**9,499**
Awards, week ended Sept. 17	**10,409**
Awards, week ended Sept. 10	**12,082**
Awards, this week in 1931	**89,000**
Av. weekly awards, 1931	**34,236**
Av. weekly awards, 1932	**15,440**
Av. weekly awards, Aug	**14,841**
Awards to date, 1931	**1,478,858**
Awards to date, 1932	**602,160**

Contracts Pending

8500 tons, United States customs house, Second and Chestnut streets, Philadelphia, specifications expected out Oct. 1; in addition, approximately 2500 tons of steel caissons will be required; also, some reinforcing bars and sheets.

5000 tons, temporary sheet steel piling, five government dams, Mississippi, Ohio and Allegheny river points.

4400 tons, housing projects, Bronx, N. Y., and Newark, N. J., action indefinite, depending on federal loan.

2173 tons, bridge, Hackensack river, route 3, section 2, Rutherford-Secaucus, N. J.; bids Oct. 17, New Jersey state highway commission, Trenton. Contract also involves 190 tons trunnions and machinery.

2000 tons, estimated, postoffice, Norfolk, Va.; bids Oct. 21.

1300 tons, state highway bridges, Nebraska.

1000 tons, McDonough street bridge, Joliet, Ill.; Independent Bridge Co., Pittsburgh, low.

1000 tons, state highway bridge, Wisconsin; Worden-Allen Co., Milwaukee, low.

880 tons, mainly class A steel castings,

lock and dam No. 2 and lock No. 3, Allegheny river; bids Oct. 14, United States engineer, Pittsburgh.
800 tons, highway bridge, Waco, Tex.
600 tons, state highway bridges, Wisconsin; American Bridge Co., New York, low.
600 tons, state highway bridges, Wisconsin; Industrial Contracting Co., Minneapolis, low.
500 tons, postoffice, Jamaica, N. Y., Rego Building Corp., Brooklyn, N. Y., low. Same firm awarded general contract for Flushing, N. Y., postoffice.
300 tons, two-span truss bridge, Lawrence county, Pennsylvania; bids at Harrisburg, Pa., Oct. 7; included 49 tons plain steel bars.
250 tons, building, Sears, Roebuck & Co., Exposition of Progress, Chicago.
250 tons, two-span truss bridge, Northumberland county, Pennsylvania; bids at Harrisburg, Pa., Oct. 7; included 8 tons plain steel bars.
200 tons, bridges, department of agriculture, Washington; bids Sept. 27, delivery to various locations.
200 tons, state bridge, Kentucky, Fort Pitt Bridge Works, Pittsburgh, low.
200 tons, government building, Exposition of Progress, Chicago.
176 tons, truss bridge, Lebanon county, Pennsylvania; bids at Harrisburg, Pa., Oct. 7; included 32 tons plain steel bars.
125 tons, postoffice, Princeton, N. J.; bids Oct. 14.
120 tons, shapes and bars, postoffice, Palo Alto, Calif.; A. Nelson, San Francisco, low.
110 tons, sheet piling, Panama; bids Oct. 11.
100 tons, state highway bridge, Wisconsin; Minneapolis Bridge Co., Minneapolis, low.
100 tons, bridge, Weyauwega, Wis.; bids Sept. 30.
100 tons, postoffice, Napa, Calif., Herbert M. Baruch Corp., Los Angeles, low.
100 tons, postoffice, Oroville, Calif., K. E. Parker Co., San Francisco, low.
Unstated tonnage, postoffice, Wilkes-Barre, Pa.; bids Oct. 19.

Concrete Bars

Week's Awards Largest of Year, Led by 2400 Tons for St. Louis Auditorium—Shipments from Pittsburgh Best Since March — Industrial Jobs Are Appearing

REINFORCING BAR PRICES, PAGE 43

New York—More than 1260 additional tons of mesh for New York state highways have been placed, the bulk of the material being bought in the Pittsburgh district. Pending requirements for New York and New Jersey are heavy. Building needs are light.

Boston—Bids close Sept. 27 on the substructure for the Saugus river bridge, Revere-Lynn, Mass., and on several state bridges at Wellesley. Approximately 500 tons of mesh is active in Connecticut. For a New Hampsihre highway, 110 tons of mesh went to a Buffalo mill.

Philadelphia — A fairly good amount of road work is active in Pennsylvania, New Jersey and Virginia, though general reinforcing bar orders are light at the moment, with prices unsettled. A fair tonnage of reinforcing bars will be required for the new customs house here.

Pittsburgh—September is the best month since last March in mill shipments of concrete bars. A state highway letting includes several 20, 30 and 40-ton lots, bids to close Oct. 7. The price situation shows no major change, with 1.60c held on cut lengths of new billet steel.

Cleveland—Concrete bar fabricators are winding up the month with much better business prospects than appeared at the start. In contrast with former work, restricted almost entirely to public construction, four industrial jobs have come out, requiring a total of approximately 300 tons. For the Cincinnati postoffice 600 tons of bars will be required.

Chicago—Private work still is lacking to supplement orders received for public construction. The volume of the latter is unchanged, while inquiries are less numerous. Orders are being distributed for Illinois road work, although the bulk of this tonnage remains to be placed.

Contracts Placed

2400 tons, municipal auditorium, St. Louis, to Missouri Rolling Mill Corp., and Laclede Steel Co., St. Louis.
1200 tons, Illinois bridges, to Laclede Steel Co., St. Louis.
1075 tons, Hetch Hetchy project, San Francisco, to Soule Steel Co., San Francisco.
900 tons, high school, Louisville, Ky., to Jones & Laughlin Steel Corp., Pittsburgh, through Rommel Co., Louisville, contractor.
450 tons, grade separation, Milwaukee, to Joseph T. Ryerson & Son Inc., Chicago.
405 tons, Illinois road work; 200 tons to Olney J. Dean & Co., Chicago, 105 tons to Missouri Rolling Mill Corp., St. Louis; 100 tons to Concrete Engineering Co., Chicago.
400 tons, bars and shapes, central steam distribution system, Washington, to Joseph T. Ryerson & Son Inc., New York.
355 tons, state highway, New York, to American Steel & Wire Co., Pittsburgh, through Arborio Road Construction Co., Hartford, Conn.
265 tons, mesh, highway, Coram-Middle Island, East county highway, Suffolk county, New York, to Concrete Steel Co., New York; A. W. Banko Inc., White Plains, N. Y., contractor.
220 tons, mesh, state highway, Duchess county, New York, to American Steel & Wire Co., Pittsburgh; Spoor-Lasher Co. Inc., Poughkeepsie, N. Y., contractor.
220 tons, mesh highway, Port Henry-Westport, New York, to American Steel & Wire Co., Pittsburgh; Lane Construction Co., Meriden, Conn., contractor.
200 tons, mesh, highway, Caroga creek, Fulton county, New York, to Pittsburgh Steel Co.; Harp & Conway Corp., Kingston, N. Y., contractor.
127 tons, state bridges, Johnston and Emanuel counties, Georgia, to Kalman Steel Corp., Bethlehem, Pa.; W. F. Scott, Thomasville, Pa., general contractor.
100 tons, or more, bridges, Eddy county, New Mexico, to Tulsa Steel Co.; J. J. Tobin Construction Co., Albuquerque, N. Mex., general contractor.
100 tons, St. Louis negro city hospital, to Truscon Steel Co., St. Louis.

Awards Compared

	Tons
Awards, week ended Sept. 24	8,317
Awards, week ended Sept. 17	1,580
Awards, week ended Sept. 10	5,877
Awards, this week 1931	2,554
Av. weekly awards 1931	6,808
Av. weekly awards, 1932	4,204
Av. weekly awards, Aug.	3,292
Awards, to date, 1931	271,355
Awards, to date, 1932	163,955

Contracts Pending

800 tons, state hospitals, Orangeberg, Dannamora and Ithaca, N. Y.
600 tons, postoffice, Cincinnati; Consolidated Engineering Co., Baltimore, low on general contract.
500 tons, bridge, Hackensack river, New Jersey; Rogers & Haggerty, New York, contractors.
300 tons, state bridges, Rhode Island; bids Oct. 5.
275 tons, grain elevator, Albany, N. Y.
260 tons, lock and dam No. 20, Mississippi river, near Canton, Mo.; bids Oct. 18, United States engineer, Rock Island, Ill.
215 tons, bar mat reinforcement, Hartford-Williamantic road, Bolton, Coventry and Andover, Conn.; Amos D. Bridges Sons Inc., contractor.
180 tons, postoffice, Jamaica, N. Y.; Rego Building Corp., New York, low.
155 tons, bridge, double leaf bascule span with three 118-foot flanking spans, Hackensack river, route 3, section 2, Rutherford-Secaucus, N. J.; bids Oct. 17, state highway commission, Trenton, N. J.
150 tons, miscellaneous highways, Connecticut, exclusive of requirements on Hartford-Williamantic section, openings of Sept. 12.
150 tons, Jewish home, Pittsburgh; contractors' bids in.
117 tons, highway work, Ventura county, California, for United States bureau of public roads; bids Oct. 6.
115 tons, lock and dam No. 2 and lock

No. 3, Allegheny river; bids Oct. 14, United States engineer, Pittsburgh.

114 tons, bridge, Beckham county, Oklahoma state highway commission; bids Sept. 27.

100 tons, state highway bridge, Wisconsin; American Bridge Co., New York, low.

100 tons, reservoir, Weimer, Calif.; bids Sept. 20.

100 tons, swimming pool, Scripps college, Claremont, Calif.; bids being taken.

100 tons, state highway bridge, Wisconsin; Industrial Contracting Co., Minneapolis, low.

100 tons, school, Malverne, N. Y.

Unstated tonnage, wire mesh and bars, six state road jobs, Pennsylvania; bids to be opened Oct. 7; they include jobs in Allegheny, Armstrong, Bedford, Lackawanna and Lawrence counties.

Warehouse Selling Shows Gain Over Recent Months

New York—Improvement in warehouse volume is spotty, gains of one day failing to hold the next, but in the aggregate a slight gain is registered. Prices are unchanged with some scattered shading on sheets.

Philadelphia—Warehouse business has gained moderately, while still behind earlier expectations, jobbers expect the current month to surpass August. Prices are unchanged.

Baltimore—Local jobbers, effective Sept. 20, have established quantity differentials on hot-rolled as well as cold-rolled products and have announced new base price. Steel bars are 2.35c; plates, ¼ inch and heavier, and shapes, 2.35c; bands, under ¼ inch, 2.65c; and blue annealed sheets, No. 10, 2.80c. Differentials are 50 cents per 100 pounds on quantities less than 1000 pounds of a size; 30 cents, 1000 to 1499 pounds, inclusive; 15 cents, quantities 1500 to 1999, inclusive; and no charge for quantities 2000 pounds or more. No material improvement in trading is noted.

Pittsburgh—Price of soft steel bars at 2.60c appears to be nominal due to mill solicitation in one instance of small orders at mill base. Small jobbing orders are more numerous but the lack of tonnage prevents September from bettering last month.

Cleveland—Small mill shipments continue to exert a depressing influence on warehouse business, but the outlook in general appears brighter. Volume has not changed much recently. Prices held fairly steady.

Detroit—The slight seasonal improvement in warehouse business in iron and steel noted for the past two weeks continues. This improvement is short of the average, but encouraging as it is the first gain in a number of months. Prices are steady.

Cincinnati—Warehouse sales continue small, with total tonnage comparable to the August rate. Demand is diversified. Prices are steady.

Chicago—Sales are definitely ahead of the August volume and up to expectations. An encouraging feature is the appearance of buying on the part of consumers absent from the market for a number of weeks.

St. Louis—Iron and steel warehouse and jobbing interests report business irregular, but with volume thus far in September well ahead of the same period in either July or August. Individual orders are small, but cover quite a wide diversity of materials.

Twenty mine hoists and derricks, valued at $19,660, were exported in July.

Pipe

Inquiry More Active at New York—1100 Tons Placed for Washington Heating System

Chicago—Activity in cast iron pipe is fairly well maintained for this period, due partly to the fact that midsummer was dull. Only occasional inquiries are appearing for more than carload lots. About 2000 tons will be required for water system construction, including a filter plant, at Springfield, Ill. A fairly large volume of business is pending, but producers see little prospect of closing on much of it before spring.

New York—Cast pipe inquiry is slightly more active, but buying is light and generally in small lots. Eastern foundries are operating at 40 to 50 per cent. About 1000 tons of large sizes is required for West Nyack, N. Y., inquiry for which has been revived. The recent changes in mill prices on steel pipe have not been reflected as yet in transactions between resellers and ultimate buyers.

Boston—Cast pipe buying and inquiry is light. For highway work at Branford, Conn., 8740 feet of 2-inch iron pipe will be bought. Usual fill-in business at this time is below normal.

Pittsburgh—Standard steel pipe continues adversely affected by slow building and little demand is noted for line pipe and oil country goods. Gulf Refining Co. has announced a $800,000 expenditure program for improvements at Staten Island, N. Y., and Washington, but will not require any new tubular material. Bids close Oct. 3, for 1750 feet of 15-inch reinforced concrete pipe, including thirty 6-inch concrete spurs by Harrison township, Natrona, Pa.

Birmingham, Ala.—Cast iron pipe is being booked slowly, and current demand is insufficient to warrant increase in production. Prices are steady.

Cleveland—About 160 tons of 12 and 16-inch cast pipe will be placed, under a blanket contract the city has with the United States Pipe & Foundry Co., Burlington, N. J., for Cleveland's Walworth road water main. Demand for steel pipe here reflects the abnormally low rate of building operations.

Cast Pipe Placed

200 tons, 6 to 20-inch, Fort Worth, Tex., to American Cast Iron Pipe Co., Birmingham, Ala.

100 tons, special castings, Baltimore, to Frederick Iron & Steel Co., Frederick, Md.

Steel Pipe Placed

1100 tons, Central steam heating system, Washington, to National Tube Co. and Spang, Chalfant & Co. Inc., Pittsburgh, through Northeastern Piping & Construction Co., North Tonawanda, N. Y.

Cast Pipe Pending

2000 tons, waterworks construction, Springfield, Ill.

1000 tons, West Nyack, N. Y.; project revived.

475 tons, 20 and 12-inch, Ridgway, Pa.

400 tons, various sizes, highway work, New York state.

202 tons, 4 to 10-inch class 150 and 250, Fresno, Calif.; bids Sept. 23.

160 tons, approximately, 12 and 16-inch, mainly 16-inch, Walworth road water main, Cleveland.

105 tons, 6-inch, West Springfield, Mass.

105 tons, 6-inch, class C, Yonkers, N. Y.; bids in.

100 tons, 24-inch, highway contract, Port Henry, N. Y.

Steel Pipe Pending

2500 tons, 18-inch, caissons for United States customs house, Philadelphia, specifications expected out shortly.

145 tons, steel and wrought iron, mainly steel, plumbing and heating, veterans' hospital, Fayetteville, Ark.; W. J. Riley, Monroe, La., general contractor.

Unstated tonnage, 8740 feet, 2-inch wrought, highway, Branford, Conn.

Unstated tonnage, 1100 steel boiler tubes, navy, Puget Sound, Wash., bids Oct. 4.

Unstated tonnage, 1891 feet, 2 to 8-inch steel, and small tonnage of 6-inch cast iron, lock and dam No. 2 and lock 3, Allegheny river; bids Oct. 14, United States engineer, Pittsburgh.

Strip

Some Betterment in Demand but Output Remains Low—Automotive Buying Delay Is Obstacle

STRIP PRICES, PAGE 43

Pittsburgh—An order for about 250 tons of 4 and 5-inch cold-rolled strip which was being figured here, has been placed with a mill outside of this district. The order was for shipment to a manufacturer in Jersey City, N. J. Hot-rolled strip is based on 1.45c, Pittsburgh, but the base price of 2.00c for cold-rolled is not commanding much business. Strip mill operations were better last week and one large independent mill started up Sept. 19 for a few days run. Releases to this district from the automotive trade still are light. A few fourth quarter contracts from automobile makers still are open.

New York—Reflecting increased activity in the textile and affiliated industries, buying of cold-rolled strip has shown an appreciable increase here over the past fortnight. Prices appear firm at 2.00c, Pittsburgh. Hot strip is less active, but unchanged at 1.45c, Pittsburgh.

Philadelphia—Strip inquiry is silghtly more active, but without sufciently large tonnages to test the 1.45c, Pittsburgh, price on hot-rolled strip and 2.00c, Pittsburgh, price on cold-rolled.

Youngstown, O.—New business for either hot or cold-rolled strip steel is slow in developing. Stampers of miscellaneous products are furnishing much of the business now coming to mills. Quotations to the general consuming trade on both hot and cold-rolled strip are steady.

Cleveland—Automotive strip orders still are restricted to a few odds and ends, buying not yet having developed for new models. Business from building hardware manufacturers is a little better than recently. The improvement noted in recent weeks in miscellaneous inquiry and orders is maintained. Sellers are having little difficulty in obtaining 1.45c, base, Pittsburgh, for hot-rolled strip, but some irregularity is noted in cold-rolled. Though the usual price is 2.00c, base, Cleveland, for cold-rolled, concessions still are noted.

Chicago—Improvement in small orders for steel strip recently has been insufficient to raise operations more than a few points and production still averages no higher than 10 per cent. Automotive orders are slow to improve and requirements of miscellaneous users have expanded only slightly. Cold-rolled strip continues particularly dull. Hot strip generally is 1.55c, with cold-rolled strip nominal at 2.00c, Pittsburgh-Cleveland.

Steel Rate Jumps to 17 Per Cent, Highest Since June

Pittsburgh—Steel ingot production last week was up a point to 16 per cent in the immediate district. Operations by two West Virginia mills are at double this rate and over. The two leading Pittsburgh mills are averaging ingot operations at 14-15 per cent. One independent producer here has resumed with two open hearths. Of 9 blast furnaces blowing here out of a possible 54, 5 are independent stacks.

American Sheet & Tin Plate Co. increased operations to 100 per cent at its Farrell, Pa., mill last week. Operations at its Shenango, Pa., plant gained to 70 per cent. Thirty out of 40 tin mills ran through the full week. The company's Monessen, Pa., mill is expected to reopen Oct. 3, with 15 or 17 of 25 hot mills on a 2 to 4-day weekly schedule. This move is necessitated by a grouping of orders for downriver and New Orleans district shipment.

Operations, week ended Sept. 24	**17**
Operations, week ended Sept. 17	**15**
Operations, week ended Sept. 10	**15.5**
Operations, one year ago	**32**
High for 1932, Feb. 6	**28.5**
Low for 1932—July 9	**12**

Philadelphia—Steelmaking operations are 14 to 15 per cent, compared with 12 to 13 a week ago. One producer put two open hearths into operation after a suspension of more than five weeks.

Buffalo—Buffalo district steelworks will operate at 11 per cent during the week of Sept. 26, with four open hearths on. Last week saw seven open hearths operating, representing 19 per cent of capacity.

Cleveland—Steel ingot production her for the week ended Sept. 24 held at 23 per cent, and is scheduled at this rate for the current week. Corrigan, McKinney Steel Co. has three units active; American Steel & Wire Co. three, and Otis Steel Co. two. Semifinished steel shipments have improved, but the difference is being made up from stock.

Youngstown, O.—District steel plant operations last week rose three points to 19 per cent, and a gain of a point or more was expected for the current week. Three of four bessemer plants have been operating with about a fourth of the district's 83 open hearth furnaces. Lack of water at the Shenango Valley plant may upset chances of an upturn this week.

Chicago—Ingot production held at 14 per cent last week, producers indicating but slight change this week. Blast furnace operations are unchanged, 8 of 36 steelworks furnaces being active. The tendency in finishing mill operations recently has been upward slightly.

Birmingham, Ala.—Steel production holds unchanged at 25 per cent, largely on the basis of small scattered orders.

Wire Trend Better And Prices Are Held Firmly

Wire Prices, Page 43

Chicago—Shipments of wire products continue to expand, largely seasonal. Specifications for manufacturer's wire are up slightly, with automotive interests more liberal in recent purchases. Prices are steady, continued into the fourth quarter at $2 in carloads for wire nails, and 2.25c for plain wire.

New York—Despite some reported irregularities, the wire market generally appears firm, with nails at $1.95, Pittsburgh, and plain bright wire at 2.20c, Pittsburgh.

Worcester, Mass.—While demand for manufacturers' wire and buying on the part of most regular consumers, including jobbers, shows only fair improvement, specialties have registered gains and public work requirements are heavier.

Pittsburgh—Nails, fencing and some wire specialties continue to move in fair volume through jobbing outlets in the South and Southwest. Otherwise, the wire market is quiet as there is little ordering of manufacuring wire and the market is almost devoid of spring wire specifications.

Cleveland—Wire tonnage has improved substantially, especially from manufacturers and jobbers. Some good orders were booked here in the past week from manufacturers who have been practically out of the market for several months.

RAW MATERIAL PRICES

Delivered pig iron prices subject to 10 per cent freight surcharge, maximum 13.44c gross ton, from Jan. 4

Pig Iron

Per Gross Ton

FOUNDRY, NO. 2

Chicago, furnace	$15.50
Pittsburgh, dist. fur.	15.00
Pittsburgh, delivered	15.63 to 16.13
Valley furnace	14.50 to 15.00
Cleveland fur., local del.	15.00
Philadelphia, delivered	13.76 to 14.26
Virginia furnace	17.25
Granite City, Ill., fur.	16.50 to 17.50
Buffalo, fur., local del.	16.00
Buff., all-rail, Boston	18.91 to 19.91
Buff., all-rail, Brooklyn	**18.90**
Buff., all-rail, Newark	**17.28**
Ala., Bir. fur., local del.	11.00
Ala., Nor. del., Bir. base	10.00
Alabama, del. Chicago	16.01
Alabama, del. St. L.	14.42
Alabama, del. Cincinnati	13.82
Ala., Phila., dock del.	15.00 to 15.25
Ala., Balt., dock del.	15.00
Alabama, New York dock	15.50
Ala., Boston dock del.	15.75 to 16.75
Tenn., Bir. base, local del.	13.00
Tennessee, del. Cinn.	13.82
Montreal, delivered	23.00 to 23.50
Toronto, delivered	22.10

FOUNDRY, NO. 2X

Buffalo fur., local del.	16.50
Buff., all-rail, Brooklyn	**19.40**
Buffalo, all-rail, Newark	**17.78**
Buff., all-rail, Boston	19.91 to 20.91
Virginia furnace	17.75
Eastern, del. Phila.	14.26 to 14.76

FOUNDRY, NO. 1X

Buffalo fur., local del.	17.50
Eastern, del. Phila.	14.76 to 15.26

MALLEABLE

Valley furnace	14.50 to 15.00
Cleveland fur., local del.	15.00
Pittsburgh dis. fur.	15.00
Pittsburgh, delivered	15.63 to 16.13
Chicago, furnace	15.50
Buffalo fur., local del.	16.50
Eastern Penna., delivered	16.13 to 19.41
Granite City, Ill., fur.	16.50 to 17.50
Montreal, delivered	24.00
Toronto, delivered	22.60

BASIC

Pittsburgh, district fur.	14.50 to 15.00
Pittsburgh, delivered	15.13 to 16.13
Eastern Penn., del.	13.50 to 14.00
Buffalo fur., local del.	15.50 to 16.00
Montreal, delivered	23.50
Valley, furnace	14.00

BESSEMER

Valley furnace	14.50 to 15.00
Pittsburgh, furnace	15.00
Pittsburgh, delivered	15.63 to 16.13

LOW PHOS.

Valley fur., standard	25.00
Philadelphia, standard	23.76 to 26.79
Copper-bear., E. Pa. fur.	21.50 to 23.00

GRAY FORGE

Valley furnace	14.00
Pittsburgh district fur.	15.00
Pittsburgh, delivered	15.63 to 16.13

CHARCOAL

Lake Superior, del. Chicago	23.04

SILVERY

Jackson County, O., fur. in per cents: 6—$18; 7—$18.50; 8—$18.75; 9—$19; 10—$19.50; 11—$20; 12—$20.50; 13—$21.50; 14—$22.50; 15—$23; 16—$24; 17—$25.50.

Pittsburgh and Buffalo furnace: 7 to 10—$19.50; 15—$23 to $24.

BESSEMER FERROSILICON

Jackson County, O., fur., in per cents: 10—$20.50; 11—$21; 12—$21.50; 13—$22.50; 14—$23.50; 15—$24; 16—$25; 17—$26.50.

Coke

Prices Per Net Ton

BEEHIVE OVENS

Connellsville furnace	$2.00 to 2.15
Connellsville foundry	2.75 to 4.25
New River foundry	6.00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25

BY-PRODUCT FOUNDRY

Newark, N. J., del.	8.21 to 8.81
Chicago, ovens, outside del.	7.00
Chicago, del.	7.75
New England, del.	10.00
St. Louis, del.	7.75
Birmingham, ovens	4.50
Indianapolis, del.	8.25
Ashland, Ky., ovens, Connell., basis	4.50
Portsmouth, O., ovens Connell., basis	4.50
Buffalo, ovens	7.50 to 8.00
Detroit, ovens	8.00
Philadelphia, del.	8.50

Iron Ore

LAKE SUPERIOR ORE

Gross ton, 51½%, Lower Lake Ports

Old range bessemer	$4.80
Mesabi bessemer	4.65
Old range nonbessemer	4.65
Mesabi nonbessemer	4.50
High phosphorus	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania New Jersey furnaces

(Nominal)

Foundry and basic, 56-63%, contract	7.50
Copper-free low phos. 58-65%	nom.

FOREIGN ORE

Cents per units, alongside docks Atlantic ports

(Nominal)

Foreign manganiferous ore, 45-55% iron, 6-10% man.	8.50 to 9.00
North African low phos.	7.50 to 8.50
Swedish basic, 65%	7.50 to 8.00
Swedish low phos.	9.00
Spanish, North African basic, 50 to 60%	7.00 to 8.00
Newfoundland fdy., 55%	8.00
Tungsten, spot, short ton unit, duty paid	$10.00 to 10.25
Chrome ore, 48% gross ton c.i.f.	$17.00 to 18.00

Manganese Ore

(Nominal)

Prices, not including duty, are cents per unit; cargo lots.

Caucasian, 52-55%	24 cents
South African, 52%	22 to 23 cents
South African, 49-51%	21 to 22 cents
South African, 44-47%	20 to 21 cents
Indian, 48-50%	22 cents
Brazilian, 46-48%	18 cents

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. Works

First Quality

Pennsylvania, Ohio, Illinois, Kentucky, Maryland, Georgia, Alabama	$35.00
Missouri	35.00

Second Quality

Pennsylvania, Ohio, Illinois, Kentucky, Missouri, Maryland	25.00 to 30.00
Georgia, Alabama	30.00

SILICA BRICK

Pennsylvania	$35.00
Joliet and East Chicago	**47.00**
Birmingham, Ala.	50.00

MAGNESITE BRICK

Per Net Ton

Burned, 9 x 4½ x 2½	$61.50
Unburned, 9 x 4½ x 2½	52.00

CHROME BRICK

Per Net Ton

F.o.b. shipping point	$42.50

MAGNESITE

Dead burned grain, net ton, Chester, Pa., or Baltimore bases	38.00
Domes, Chewelah, Wash., base	20.90

Semifinished Steel

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$26.00
Pittsburgh, bassemer	26.00
Youngstown	26.00
Cleveland	26.00
Philadelphia	31.75
Chicago	28.00
Forging, Chicago	33.00
Forging, Pittsburgh	33.00
Forging, Philadelphia	37.75

SHEET BARS

Pittsburgh	26.00
Youngstown	26.00
Cleveland	26.00
Chicago	28.00

SLABS

Pittsburgh	26.0
Youngstown	26.0
Cleveland	26.0

WIRE RODS

Pittsburgh, Cleveland	$37.00
Chicago	38.00

SKELP

All grades, Pittsburgh	1.50c to 1.60c

Ferroalloys

(In dollars, except Ferrochrome)

Ferromanganese, 78-82%, tidewater, duty paid	$68.00
Ferromanganese, del. Pittsburgh	73.24
Spiegeleisen, 19-20%, domestic fur. spot†	25.00
Ferrosilicon, 50 per cent, freight all., c. l.	77.50
Do, less carload	85.00
Do, 75 per cent	126.00 to 136.00
Silicomang., 2½% carb.	105.00
2% carbon	110.00
1% carbon	115.00
(The above for spot carlots. Contract price $5 a ton less).	
Ferrochrome, 60-70 chromium, 4-6 carbon, cts. lb. con. del.	10.00
Do, for spot delivery	10.50
Ferrotungsten, stand., lb. cont.	1.00 to 1.10
Ferrovanadium, 30-40 per cent, per lb. contained, on analysis	3.05 to 3.30
Ferrotitanium, c.l., prod. plant, frt. allow., net ton	137.50
Spot, 1 ton, frt., all., lb.	8.50
Do, under 1 ton	9.00
Ferrophosphorus, per ton, carload 17-19 per cent, Rockdale, Tenn., basis; 18%, $2 unitage	50.00
Ferrophosphorus, electrolytic per ton carload, 23-26% f.o.b. Anniston, Ala.; 24%, $2.75 unitage	65.00
Ferromolybdenum, stand. 50-60 per cent. per lb.	0.95
Cal. Molybdate, lb. cont.	0.80
Molybdate, lb, cont.	0.80

†Carloads. Differentials apply to quant.

Fluorspar

85 and 5 per cent grade

Washed gravel, f.o.b. Ill., Ky., net ton car loads	$12.00
Washed gravel, import duty paid tide, gross ton	18.50

Pig Iron

Sixty Thousand Tons Placed by Three Consumers — Radiator Purchase May Stimulate Buying

PIG IRON PRICES, PAGE 50

New York—Purchase of 50,000 tons of foundry iron by the American Radiator & Standard Sanitary Corp. for various plants has had a salutary effect on sentiment here. In addition, sales of 5000 tons of basic to the Stanley Works, New Britain, Conn., 5000 tons of foundry iron to the Draper Corp., Hopedale, Mass., and 1000 tons of malleable iron for the Malleable Iron Fittings Co., Branford, Conn., have contributed to the improved tone. The New Britain and Branford tonnages were placed abroad, with the latter reliably reported at $14, delivered by barge to consumer's plant. The Raditor company's order is for delivery as required up to July 1, 1933.

Boston—Draper Corp., Hopedale, Mass., has closed for 5000 tons of No. IX and No. 2X iron, for delivery covering part of next year, the bulk of the business going to Buffalo and eastern Pennsylvania furnaces. Stanley Works, New Britain, Conn., also has purchased 5000 tons of iron, and the Malleable Iron Fitting Co., Branford, Conn., 1000 tons.

Domestic iron producers continue to be confronted with competition from imported iron. Delivered prices of imported tonnage frequently are as low as the price quoted at Buffalo and eastern Pennsylvania furnaces.

Pittsburgh—Some car lot orders for bessemer and foundry have been received recently. Radiator foundries probably are the most active buyers although no part of 50,000-ton order for the American Radiator & Standard Sanitary Corp., was placed for its plant here. Columbia Radiator Co., recently inquired for prices on about 300 tons of foundry iron. Basic iron requirements for a Sharon, Pa., interest have since last week been supplied by a new source. The iron previously was supplied by a Cleveland blast furnace. The Shenango Furnace Co. has relighted one of its Sharpsville, Pa., stacks for a short run; and the Carnegie Steel Co. has put on a stack at Farrell, Pa.

Philadelphia—An inquiry for 3000 to 5000 tons of gray forge iron for the Reading Iron Co., Reading, Pa., is the first open inquiry for this grade in a number of months. The Brooke stack at Birdsboro, Pa., may be blown in shortly.

Buffalo—Demand for pig iron continues to broaden, with coverage for fourth quarter well ahead of that for any other quarter this year. Buffalo furnaces shared in some of the large eastern sales during the week.

Youngstown, O.—Quietly covering their pig iron needs for the fourth quarter, consumers of foundry and malleable grades have been doing some buying at what they consider satisfactory prices. These are declared to be in line with published quotations. Bessemer, No. 2 foundry and malleable are $14.50, valley furnace, while No. 3 foundry, basic and gray forge are $14.

Cleveland—A Cleveland furnace booked several thousand tons of pig iron for the Elyria, O., subsidiary of the American Radiator & Standard Sanitary Corp., part of its purchase of 50,000 tons for various plants, announced during the week. The Buffalo subsidiary's requirements were closed with a Buffalo furnace; and those for the Detroit subsidiary, with a Detroit maker. Aside from the Elyria order, approximately 4000 tons was placed with Cleveland furnaces during the week. Reports here indicate that there has been a good volume by other large consumers recently without inquiry or announcement. Automotive interests are beginning to cover. Some Cleveland foundries have stepped up operations. The usual price for local delivery is $15, base, Cleveland, with $14 to $14.50, lake furnace, applying on shipment into competitive districts.

Cincinnati—A turn in buying sentiment is apparent in this district with more sales. An inquiry for 1000 tons now is pending. Southern iron is firm at $10, base, Birmingham, shown by a recent test on 500 tons.

Chicago — September sales for some interests are expected to be around 50 per cent ahead of the August total, with a larger increase in shipments. Production of new automobile models which will commence in October will result in heavier shipments to the latter industry next month. The increase in sales and shipments recently has been fairly well diversified. Some southern iron still is moving into this district, with the price continuing $16.01, delivered. The market on northern iron is firm at $15.50, furnace, for the No. 2 foundry and malleable grades.

St. Louis—Sales and shipments are more active, especially to manufacturers of stoves and heating apparatus, and agricultural implements.

Birmingham, Ala.—Southern furnaces are reducing their stocks. Woodward Iron Co. now has two furnaces in blast, The Tennessee Coal, Iron & Railroad Co. has one on basic.

Toronto, Ont.—Merchant sales are maintaining the higher rate noted recently. The daily melt is holding at 20 to 25 per cent. The Steel Co. of Canada Ltd., Hamilton, Ont., has banked its furnace.

Coke

Foundry Shipments Stepping Up In Some Districts, Slow in Others—Prices Are Steady

COKE PRICES, PAGE 50

Pittsburgh—At no more than $2 per ton, Connellsville furnace coke is displaying little change in demand. There have been some sales recently at $1.95 and $1.85. The movement of by-product foundry coke still is slow, some large radiator foundries taking only a 20-ton car or two weekly. Foundry coke continues at $2.75 for the common grades and nominally $4.25 for premium.

Cincinnati— Some improvement in shipments of by-product foundry coke, notably to stove manufacturers, is noted.

New York—Despite several outstanding purchases of pig iron in the East recently, foundry operations show little change and this is reflected in coke specifications. Prices are unchanged.

Chicago—Shipments of by-product foundry coke continue to record improvement over the August movement. The increase has been somewhat less than that noted in pig iron, although the upturn in coke shipments started a number of weeks ahead of the betterment in pig iron

St. Louis—Shipments to foundries are larger, which reflect better operating rates, as melters show no disposition to increase stocks.

Birmingham, Ala.—Practically all coke producers here report moderate gains in coke demand. The larger operators are holding to $4.50, Birmingham, for foundry coke.

Scrap

Ohio Lake Mill Buys About 20,000 Tons Steel for Water Delivery—Some Scarcity Developing

Cleveland—Largest single purchase of iron and steel scrap made by any Cleveland district consumer in many months has just been concluded for delivery at Lorain, O., for the National Tube Co. The tonnage involved is believed to amount to 20,000 tons of strictly No. 1 heavy melting and pressed sheets. Most of this tonnage will be delivered via lake vessels, this being expected to come in from Chicago, Milwaukee, and Duluth. It is understood also that one railroad serving this locality will furnish 5000 to 6000 tons. Immediate deliveries are asked upon a considerable portion of the tonnage. It is understood that around $9.75, delivered, Lorain, for part of this scrap was paid.

Shipments here in general are

IRON AND STEEL SCRAP PRICES

Corrected to Friday night. Gross tons delivered to consumers, except where otherwise stated

HEAVY MELTING STEEL

Birmingham	5.50 to 6.00
Boston, dealers	3.75 to 4.00
Buffalo, No. 1	7.25 to 7.50
Buffalo, No. 2	6.25 to 6.50
Chicago	5.75 to 6.00
Cleve., No. 1	7.50 to 8.00
Cleve., No. 2	6.50 to 7.00
Det., No. 1 deal.	5.75 to 6.25
Det., No. 2 deal.	4.00 to 4.50
E. Pa. del. mill	7.00 to 7.50
E. Pa., No. 2 del.	5.50 to 6.00
N. Y. deal. R. R.	4.75 to 5.00
N. Y. deal, No. 2	3.50
N. Y. deal. yd.	2.50 to 3.00
Pitts. No. 1	9.50 to 10.00
St. L. No. 1 sel.	6.00 to 6.50
Federal, Ill.	5.50 to 6.00
Granite City, Ill.	5.00 to 5.50
Valleys, No. 1	10.00 to 10.50

COMPRESSED SHEETS

Buffalo, dealers	6.25 to 6.50
Chi. (Factory)	4.25 to 4.75
Cleveland	7.00 to 7.50
Detroit, dealers	5.25 to 5.75
E. Pa. new mat.	5.00 to 5.50
Pittsburgh	9.25 to 9.75
Valleys	9.00 to 9.50

BUNDLED SHEETS

Buffalo	4.00 to 4.25
Cinci., del.	4.25 to 4.75
Cleveland	5.00 to 5.50
Eastern, Pa.	5.00
Pittsburgh	8.00 to 8.50
St. Louis	1.50 to 2.00

SHEET CLIPPINGS LOOSE

Chicago	2.00 to 2.50
Cincinnati	2.00 to 2.50
Detroit, dealers	2.00 to 2.50
St. Louis	1.50 to 2.00

STEEL RAILS SHORT

Birmingham	7.50 to 8.50
Boston, dealers	4.00 to 4.50
Buffalo	9.00 to 9.50
Chicago (3 ft.)	8.00 to 8.50
Chicago (2 ft.)	8.50 to 9.00
Cinci., del.	9.00 to 9.50
Detroit, deal.	8.00 to 8.50
Pitts. (open-hearth, 3 ft. and less)	10.50 to 11.00
St. Louis	7.50 to 8.00

STOVE PLATE

Birmingham	5.50 to 6.00
Boston, dealers	2.50 to 3.00
Buffalo	7.25 to 7.50
Chicago, net	5.75 to 6.25
Cinci., deal. net	3.50 to 4.00
Det., net deal.	3.00 to 3.50
Eastern Pa.	6.50
N. Y., deal. mill	2.50 to 3.00
St. Louis	5.50 to 6.00

COUPLERS, SPRINGS

Buffalo	9.00 to 9.50
Chicago	6.50 to 7.00
Eastern Pa.	9.00 to 9.50
Pittsburgh	9.50 to 10.00
St. Louis	6.00 to 6.50

ANGLE BARS—STEEL

Chicago	7.00 to 7.50
St. Louis	6.00 to 6.50

LOW PHOSPHORUS

Buffalo, billets and bloom crops	9.00 to 9.50
Cleveland bil. and bloom crops	10.00 to 11.00
Eastern Pa.	9.00 to 9.50
Pittsburgh billet bloom crops	10.50 to 11.00
Pitts., sheet bar crops	11.00 to 12.00

FROGS, SWITCHES

Chicago	6.00 to 6.50
St. Louis	6.00 to 6.50

SHOVELING STEEL

Chicago	5.75 to 6.00
Cleveland	6.25 to 6.50
St. Louis	5.00 to 5.50

RAILROAD WROUGHT

Birmingham	4.50 to 5.00
Boston, dealers	1.00 to 1.50
Buffalo, No. 1	4.50 to 5.00
Buffalo, No. 2	7.00 to 7.50
Cinci., No. 2	5.75 to 6.25
Chi., No. 1, net	5.00 to 5.50
Chicago, No. 2	5.75 to 6.00
Eastern Pa.	7.00 to 7.50
N. Y., No. 1, deal.	2.50 to 3.00
Pitts., No. 2	9.50 to 10.00
St. Louis, No. 1	3.50 to 4.00
St. Louis, No. 2	5.00 to 5.50

SPECIFICATION PIPE

Boston	3.00 to 4.00
Eastern Pa.	7.00 to 7.50
N. Y., deal	2.00 to 2.25

BUSHELING

Buffalo, No. 1	6.25 to 6.50
Chicago, No. 1	4.50 to 5.00
Cinn., No. 1 dl.	4.00 to 4.50
Cinn., No. 2	2.50 to 3.00
Cleve., No. 2	3.00 to 3.50
Det., No. 1 new deal	4.75 to 5.25
St. L., No. 1	3.00 to 3.50
Val. new No. 1	8.50 to 9.00

MACHINE TURNINGS

Birmingham	3.00 to 3.50
Boston, dealers	0.75 to 1.00
Buffalo	3.75 to 4.25
Chicago	3.00 to 3.50
Cin., deal.	3.00 to 3.50
Cleveland	4.50 to 5.00
Detroit	2.75 to 3.25
Eastern Pa.	3.50 to 4.00
N. Y., deal	1.35 to 1.50
Pittsburgh	6.25 to 6.75
St. Louis	1.50 to 2.00
Valleys	7.00 to 7.50

BORINGS AND TURNINGS

For Blast Furnace Use

Boston, dealers	.75 to .90
Buffalo	3.75 to 4.25
Cinn., deal.	3.00 to 3.50
Cleveland	4.50 to 5.00
Detroit, deal.	2.75 to 3.25
Eastern Pa.	3.00 to 3.50
N. Y., deal	1.35 to 1.50
Pittsburgh	6.25 to 6.75

CAST IRON BORINGS

Birming., chem.	12.50 to 13.00
Birming., plain	3.00 to 3.50
Boston, chem.	5.00 to 5.50
Boston, dealers	1.00 to 1.25
Buffalo	4.25 to 4.50
Chicago	4.00 to 4.50
Cinn., deal.	3.00 to 3.50
Cleveland	4.50 to 5.00
Detroit, deal.	2.75 to 3.25
Eastern Pa.	3.00 to 3.50
E. Pa., chem.	8.00 to 10.50
N. Y., deal.	1.00 to 1.50
Pittsburgh	6.25 to 6.75
St. Louis	2.75 to 3.25

PIPE AND FLUES

Cinn., deal.	3.25 to 3.50

RAILROAD GRATE BARS

Buffalo	4.00 to 4.50
Chicago, net	5.00 to 5.50
Cincinnati	4.00 to 4.50
Eastern Pa.	5.50 to 6.00
N. Y., deal.	3.50 to 4.00
St. Louis	4.50 to 5.00

FORGE FLASHINGS

Boston, dealers	2.00 to 2.50
Buffalo	4.50 to 5.00
Cleve. ov. 10 in.	6.50 to 7.00
Detroit	4.00 to 4.50

FORGE SCRAP

Boston, dealers	1.75 to 2.00
Chicago	7.00 to 7.50
Eastern Pa., del.	5.00 to 5.50

ARCH BARS, TRANSOMS

Chicago, net	5.00 to 5.50
St. Louis	5.00 to 5.50

AXLE TURNINGS

Boston, deal.	6.00 to 6.50
Buffalo	6.50 to 7.00
Chi., elec. fce.	5.00 to 5.50
Cleveland	5.50 to 6.00
Eastern Pa., del.	7.00
Pittsburgh, O. H.	8.00 to 8.50
St. Louis	3.50 to 4.00

STEEL CAR AXLES

Birmingham	8.50 to 9.00
Boston, ship. pt.	6.00 to 6.50
Buffalo	10.00 to 10.50
Chicago, net	8.50 to 9.00
Eastern Pa.	14.50
St. Louis	9.00 to 9.50

SHAFTING

Boston, ship. pt.	6.50 to 7.00
N. Y., deal.	6.50 to 7.00
St. Louis	7.50 to 8.00
E. Penna.	10.50 to 12.00

CAR WHEELS

Birming., iron	5.50 to 6.00
Boston, iron deal.	3.50 to 4.00
Buffalo, iron	7.00 to 8.00
Buffalo, steel	8.50 to 9.00
Chicago, iron	7.00 to 7.50
Chi., rolled steel	6.50 to 7.00
Cincinnati iron	6.25 to 6.75
E. Pa. steel	9.00 to 10.00
E. Pa. iron	9.00 to 9.50
Pitts., iron	8.50 to 9.00
Pitts., steel	9.50 to 10.00
St. Louis, iron	5.00 to 5.50
St. Louis, steel	7.00 to 7.50

NO. 1 CAST SCRAP

Birmingham	6.00 to 7.00
Buffalo (Mach.)	9.75 to 10.00
Buffalo, cupola	9.00 to 9.25
Boston, textile	7.00 to 7.50
Boston No. 2	3.00 to 3.50
Chi., mach. net	6.50 to 7.00
Chi., railroad, net	6.00 to 6.50
Chicago, agri., net	5.00 to 5.50
Cinn., mach. cup.	7.00 to 7.50
Cleve. cupola	7.00 to 8.00
Det., net deal.	6.50 to 7.00
E. Pa. cupola	9.00 to 9.50
N. Y., cup. deal.	5.50 to 6.50
N. Y., del. local foundries	8.00 to 8.50
Pitts., cupola	9.50 to 10.00
San Fran., del.	13.50 to 14.00
Seattle	4.50 to 6.50
St. L. No. 1 ma.	6.50 to 7.00
St. L., No. 1	6.00 to 6.50

HEAVY CAST

Boston, del.	4.00 to 4.25
Bost., mach. cast	7.00 to 7.50
Buffalo, break	6.50 to 7.00
Cleve., break	4.50 to 5.00
Detroit, auto, net deal.	7.00 to 7.50
Det., break., dl.	5.00 to 5.50
Eastern Pa.	8.50 to 9.00
N. Y. No. 1, dl.	5.00 to 5.50
N. Y. break, dl.	4.75 to 5.25
Pittsburgh	8.25 to 8.75

MALLEABLE

Boston Consum.	7.50 to 8.00
Buffalo	7.50 to 8.00
Chicago, agri.	5.00 to 5.50
Chicago, R. R.	6.50 to 7.00
Cinci., R. R., del.	7.50 to 8.00
Cinci., agri. del.	7.00 to 7.50
Cleveland, rail	7.50 to 8.00
Det. auto deal.	5.00 to 5.50
St. Louis, rail	4.50 to 5.00

RAILS FOR ROLLING

5 feet and over

Birmingham	7.00 to 7.50
Boston, deal.	5.00 to 5.50
Buffalo	7.00 to 7.50
Chicago	7.00 to 7.50
Eastern Pa.	9.50
New York dealer	4.25 to 4.75
St. Louis	7.25 to 7.75

LOCOMOTIVE TIRES

Chicago, cut	7.00 to 7.50
St. L., No. 1	5.00 to 5.50

LOW PHOS. PUNCHINGS

Chicago	8.00 to 8.50
Buffalo	9.00 to 9.50
Eastern Pa.	9.50 to 10.00
Pittsburgh	10.50 to 11.00

small and new business light, with quotations steady and unchanged.

Boston—Scrap buying is dull with prices on most grades steady. For No. 1 steel, New England delivery, $5 to $5.50 is being paid for small shipments to Worcester and the Providence district, the former also taking some No. 2 steel at $4, delivered. No. 1 machinery cast sells at $5, f.o.b., in some instances slightly higher, and supplies of this grade are not large. Heavy breakable is $4.25, shipping points.

New York—Scrap prices are steady, recent advances in several grades being retained. A fair tonnage of yard steel is being bought for Harrisburg, Pa., at $6, delivered. American Radiator & Standard Sanitary Co. has been a heavy purchaser of stove plate and cast iron for its Tonawanda, N. Y., plant. Donner Steel Co., Buffalo, bought 5000 tons of No. 2 steel for which the broker is paying $3.50, barge. It is reported an unusually low barge rate to the Buffalo district was negotiated for this shipment. Moderate shipments of No. 1 steel are being made to Coatesville, Pa.

Philadelphia—Sentiment in scrap is mixed but inclined to strength. Prices on some grades have advanced and in no case has there been a reduction. No. 2 heavy melting steel is easier, reflecting some recent substantial arrivals here by barge and suspension of shipments at Phoenixville and Conshohocken, Pa. The Wharton, N. J., blast furnaces will produce close to 7000 tons of scrap, instead of 4000 tons, as originally reported. Bethlehem Steel Co., which purchased the furnaces for dismantling on a lump sum basis, at a reported price of $25,000, will resell the greater portion of the cast scrap involved, it is understood.

Buffalo—Some fair tonnages of No. 2 heavy melting steel have been purchased for local delivery, at about $6.75, delivered at consuming plant. This selling has raised the prices of several materials about 75 cents a ton.

Pittsburgh—During the past two weeks almost every buyer of steel and iron scrap in this and surrounding districts has been in the market. Last week purchase was made of a round tonnage of heavy melting steel for Vandergrift, Pa., at $10 and later in the week over 15,000 tons of heavy melting steel and hydraulic compressed sheets was closed at over $9 for shipment into Lorain, O.

Detroit—The iron and steel scrap market here appears a trifle easier, but it cannot be said to be definitely weaker. On the part of both buyers and sellers a "watchful waiting" policy appears to have been adopted. The general expectation among dealers is that prices will not weaken materially but may again move forward within the next two or three weeks.

Cincinnati — Supplies of iron and steel scrap have dried up, the situation being aggravated by withdrawal of 40,000 tons by the Louisville & Nashville railroad, even though bids were considerably higher than when last offered in May.

Chicago—Scrap is slightly less active while prices are fairly strong and unchanged. Dealers are encountering difficulty in picking up heavy melting steel at less than $6, the price prevailing on recent sales of this grade to an independent mill.

St. Louis—For the first time since the recent strengthening in iron and steel scrap prices began, some purchasing, mainly of heavy melting steel and steel specialties, has developed. The volume is not large, but as contrasted with late weeks forms the basis for considerable encouragement.

Birmingham, Ala.—Heavy melting steel has had a little better demand recently. Prices are unchanged with one large melter still insisting on its own basis.

Toronto, Ont.—A slight spurt was reported in iron and steel scrap sales during the week. Demand, however, is specialized and only a few grades are moving. The betterment was in machinery cast and stove plate and a few other iron grades.

Bolt, Nut Buying Steady; August Rate Bettered

Bolts, Nuts, Rivets Prices, Page 43

Pittsburgh—Fully 75 per cent of fourth quarter contracts, issued two weeks ago, have been returned completed. The present schedule of 75 off list for carriage and machine bolts appears to be observed and efforts are being made generally to obtain 2.25c for large rivets. Orders are showing only minor change from August.

Chicago—Specifications for bolts, nuts and rivets continue in small lots, the total showing a small increase over activity a month ago. New contracts are being received, with the market steady at 75 off for bolts and nuts and 2.35c for large rivets.

Cleveland — Leading automotive builders have placed blanket contracts for nuts and bolts for the third quarter, to be ordered according to requirements. Current prices apply. Some builders immediately offered to contract at these prices for the entire first half of 1933, but makers refused.

Iron Ore Consumption At Low Point for August

Iron Ore Prices, Page 50

Cleveland—August marked the low point of the year in Lake Superior iron ore consumption. The amount was 606,961 tons, compared with 1,652,247 tons in the month last year. The Lake Superior Iron Ore association's current report:

	Tons
Ore consumed in July	644,732
Ore consumed in August	606,961
Decrease in August	37,771
Consumed in August, 1931	1,652,247
On hand at furnaces Sept. 1, 1932	26,895,962
On Lake Erie docks Sept. 1, 1932	5,267,689
Total at furnaces and Lake Erie docks Sept. 1, 1932	32,163,651
Total Sept. 1, 1931	35,071,201

Ferromanganese Demand Better; Spiegeleisen Off

Ferroalloy Prices, Page 50

Ferromanganese specifications show further small improvement. Prices are unchanged at $68, duty paid, on car lots. Electro Metallurgical Sales Corp., New York, is low on 3000 pounds of ferromanganese for the Panama canal commission. On 10,000 pounds of ferrosilicon for the Panama canal commission, F. W. Marshall & Co., Philadelphia, are low. Following a fairly good pick-up in spiegeleisen, specifications have dropped. As a result domestic spiegeleisen sales so far this month are about on a parity with those of the corresponding period of August. Prices are unchanged at $25, furnace.

Semifinished Shipments Larger; Rods More Active

Semifinished Prices, Page 50

Semifinished steel shipments from some mills have increased substantially. The movement from a Cleveland steelworks in the week ended Sept. 17 was reported to be the best of any week in 18 months. This pertains especially to sheet bars, billets and slabs. Other makers also report wire rods in better demand. Expansion of tin mill operations at valley works has called for larger production of tin bars in the Sharon and New Castle, Pa., areas. Semifinished steel prices are unchanged.

Nonferrous Mill Products

Base price cents per pound f.o.b. mill except otherwise specified. Copper and brass product prices based on 6.25c, Conn., for copper

SHEETS	
Yellow brass (high)	12.50
Copper, hot rolled	15.37½
Lead sheets, cut, to jobbers	7.00
Zinc sheets (100-lb. base)	9.00
TUBES AND PIPES	
Seamless yellow brass (high)	15.25
Seamless copper	14.37½
RODS	
Yellow brass (high, full turning)	10.25
Naval brass	11.37½
ANODES	
Copper, untrimmed	12.25
WIRE	
Yellow brass (high)	12.50

Old Metals

Dealers' buying prices, cents lb. No. 1 Composition Red Brass

New York	3.00 to 3.25
Chicago	3.25 to 3.50
Cleveland	3.00 to 3.25
St. Louis	2.50
HEAVY YELLOW BRASS	
New York	2.00 to 2.25
HEAVY COPPER AND WIRE	
New York	3.87½ to 4.12½
Chicago, No. 1	3.75 to 4.00
Cleveland	3.50 to 3.75
St. Louis	2.75
COMPOSITION BRASS BORINGS	
New York	2.87½ to 3.12½
YELLOW BRASS TUBING	
Cleveland	2.00 to 2.25
LIGHT COPPER	
New York	3.50 to 3.75
Chicago	2.75 to 3.00
Cleveland	3.00 to 3.25
St. Louis	2.50
LIGHT BRASS	
Chicago	1.75 to 2.00
Cleveland	1.50 to 1.75
St. Louis	1.50
LEAD	
New York	2.65 to 2.87½
St. Louis	2.25 to 2.50
ZINC	
New York	1.12½ to 1.37½
Cleveland	1.00 to 1.25
St. Louis	1.25
ALUMINUM	
Clippings, new, soft, Cleve.	9.00 to 10.00
Clippings, hard, Cleveland	7.00 to 8.00
Borings, Cleveland	3.00 to 3.50
Mixed cast, Cleveland	4.00 to 4.50
Mixed cast, St. Louis	2.50 to 3.00

Secondary Metals

Remelt, aluminum No. 12	7.50 to 8.50
Brass ingots, 85-5-5-5	6.25

Metals

Easier Situation Develops in Lead, Tin and Zinc—Market for Copper Continues Firm

New York—Easiness developed in lead, tin and zinc last week due largely to weakness early in the period in stock and commodities combined with continued dull demand. Copper held firm, however, as did aluminum, antimony and nickel.

Copper—Both mine producers and custom smelters maintained their prices on electrolytic metal at 6.25c, Connecticut basis, apparently holding to the belief that lower prices would bring out no more business. Light offerings of resale metal at 6.00c had little weakening effect on the market. Copper at 6.25c, however, was available for delivery into first quarter next year. A comparatively negligible amount of business was booked during the week. World stocks of copper Aug. 31 were estimated at 796,800 tons, against 799,000 tons a month earlier. August deliveries in this country were the lightest in years at around 18,000 tons. Prices were somewhat higher abroad.

Lead—A period of dull demand brought a reduction of $4 a ton in pig lead last week. Desire of some producers to book more business evidently was the principal reason for the cut since one large interest maintained the former level. Decline in foreign lead prices to near domestic parity also may have prompted the reduction, which did not stimulate buying.

Zinc—Shading by resellers resulted in an easier situation in the zinc market. Some producers quoted the lower prices but others continued to ask the higher figures reached earlier this month. Consumer demand was insufficient to absorb the resale metal offered.

Aluminum—Both virgin and remelt ingot was firm with the latter quoted somewhat higher.

Tin—Straits metal fell to below 24.00c early in the week but later recovered somewhat with the stronger market for commodities and securities and higher prices in London. Aggregate volume of business booked during the week by sellers was only fair.

Distillates In Better Demand; Prices Steady

New York—Demand for distillates has broadened slightly, notably toluol. Prices are firm. Naphthalene contracting is expected to start next month. Prices on new contracts are withheld, but some distributors say efforts will be made to strengthen current quotations which have been unchanged officially for many months. Phenol demand is routine, at unchanged prices.

Coke By-Products

Per Gallon, Producers' Plants, Tank Lots

	Spot
Pure benzol	$0.20
90 per cent benzol	0.20
Toluol	0.30
Solvent naphtha	0.26
Commercial xylol	0.26

Per Pound at Producers' Plants in 250-Pound Drums

Phenol	0.153 to 0.173

Per Pound at Producers' Plants

Naphthalene flakes	3.75 to 4.75
Naphthalene balls	4.75 to 5.75

Per 100 Pounds Atlantic Seaboard

Sulphate of ammonia	$0.90 to $1.00

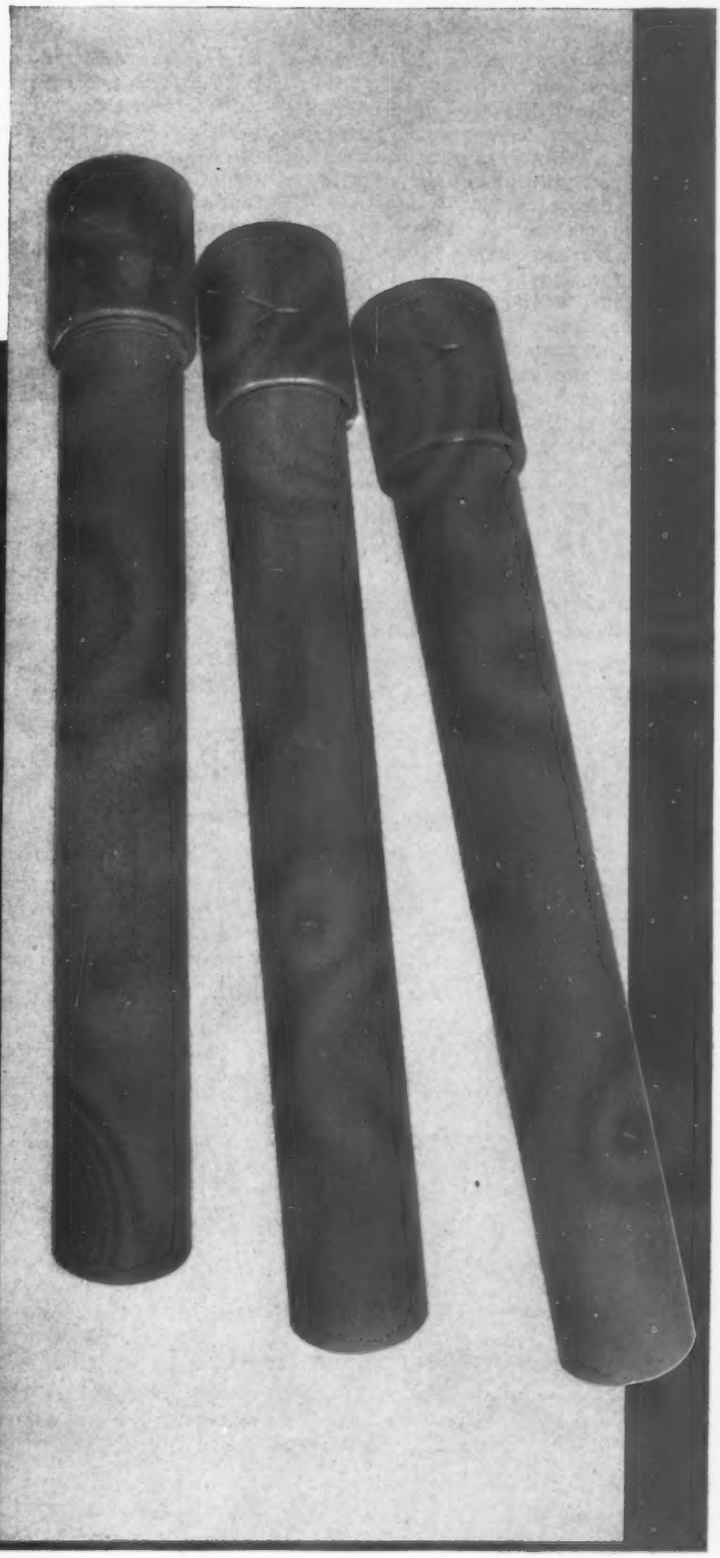
Quicksilver Firm

New York—Quicksilver prices are firm, small lots quoted $48 a virgin flask of 76 pounds, and round lots available at $47. Demand has eased. Production is reported curtailed further by the closing of mines in the West.

Nonferrous Metal Prices of the Week, Cents a Pound

	Copper: Electro delivered	Copper: Lake delivered	Copper: Casting refinery	Straits Tin: New York Spot	Straits Tin: New York Futures	Lead N. Y.	Lead East St. L.	Zinc St. L.	Aluminum 98-99%	Spot Antimony	Ingot Nickel
Sept. 16	6.25	6.37½	6.00	24.50	24.75	3.60	3.45	3.40	22.90	5.62½	35.00
Sept. 19	6.25	6.37½	6.00	23.87½	24.12½	3.60	3.45	3.35	22.90	5.62½	35.00
Sept. 20	6.25	6.37½	6.00	24.35	24.55	3.50	3.45	3.30	22.90	5.62½	35.00
Sept. 21	6.25	6.37½	6.00	24.65	24.85	3.40	3.25	3.25	22.90	5.62½	35.00
Sept. 22	6.25	6.37½	6.00	24.75	24.95	3.40	3.25	3.25	22.90	5.62½	35.00
Sept. 23	6.25	6.37½	6.00	24.87½	25.07½	3.40	3.25	3.25	22.90	5.62½	35.00

YOUNGSTOWN PIPE



STRENGTH

UNIFORMITY

DEPENDABILITY

THE YOUNGSTOWN SHEET AND TUBE COMPANY

GENERAL OFFICES . . . YOUNGSTOWN, OHIO

Europe

British Confidence Grows While Domestic Sales Remain Small—Continent Increases Exports

London—(*By Cable*)—Confidence in the steel and iron market is increasing perceptibly in spite of the reaction from the recent buying movement. Pig iron continues the bright spot, with structural steel inactive. Makers of heavy steel products are seeking specifications for early deliveries. Scrap is weak.

The Continent reports a much firmer tone, leading to a stabilization of prices. Recent orders have been mostly for overseas shipment, with little tonnage from Great Britain. The German cartel has advanced prices on pig iron. Inquiry for steel shows a marked tendency to broaden.

Pacific Coast

Golden Gate Bids to Be Readvertised—Buying Small

San Francisco—(*By Air Mail*)—Of importance this week was the decision of the directors of the Golden Gate bridge and highway district to call for new bids on the Golden Gate bridge with the exception of the contract for furnishing 75,000 tons of structural steel. The district has extended the time six months on the contract with McClintic-Marshall Corporation at $10,494,000 for the steel superstructure, contract 1 A. All other contracts have been rejected and will be readvertised at once. This means that new bids will be taken on 28,000 tons of wire cable on which the American Cable Co. was originally low bidder.

The only reinforcing bar award of size involved 1075 tons for the Hetch Hetchy project, San Francisco, and was placed with the Soule Steel Co. Bids on 255 tons for the Kern river bridge in California, which called for 1041 tons of structurals, have been postponed. Bids open this week on 100 tons for a reservoir at Weimer, Calif. Merchant bar steel continues to move in small lots only, most distributors and consumers having sufficient stock for sixty days.

Consolidated Steel Corp., took 140 tons of structural steel for a warehouse for the Six Companies, Boulder City, Nev. Bids are being taken on 800 tons for a pipe fabricating plant in Boulder City for Babcock & Wilcox. Bids have been opened on 577 tons for a postoffice at Reno, Nev. Plain standard shapes hold at 2.10c, c.i.f.

Demand for cast iron pipe remains quiet. Bids were opened Sept. 23 for 202 tons for Fresno, Calif. About 170 tons of 6-inch pipe are involved in a project in Oahu, T. H., for the bureau of yards and docks, Washington, on which bids will be opened Nov. 2.

Northwest Feels Better

Seattle—Although business indices are favorable, conditions in the Pacific Northwest are improving slowly. Iron and steel products are not in active demand but prices are firm and the trade is hopeful. Public construction continues at high levels and many projects of importance are promised for the near future.

No important jobs involving steel have developed definitely but several small contracts for reinforcing and structurals are pending. Bureau of public roads this week opened bids at Portland, Oreg., on four projects totaling $150,000. Bids are in for a government road in Yakima county calling for 156 tons structurals and 40 tons reinforcing. Bids will be opened Sept. 17 at Salt Lake City, Utah, for a 200-foot steel bridge over the Denver & Rio Grande tracks near Moark, estimated to cost $25,000. Bureau of roads will receive bids at Portland, Oct. 5, for four bridges in Jackson county, Oregon, involving 135 tons of reinforcing and a small tonnage of shapes.

Priest Rapids irrigation district, White Bluffs, Wash., is considering bids for two turbines, low tender at $24,240 by James Leffel & Co.

While the jobbing turnover is slow, there is a fair volume of bars plates, sheets and shapes but all in small tonnages. There is practically no carload or mill business. Retailers are not replenishing stocks. Prices are steady and firm.

Pipe specifications are developing slowly. Deer Lodge, Mont., has under consideration the low bid of Lease & Leigland, Great Falls, Mont., at $139,859 for a new water system involving 1000 tons of cast iron pipe. Portland has opened bids for 200 tons of 30-inch cast iron pipe and Astoria, Oreg., is calling bids for furnishing 110 tons of steel pipe.

The scrap markets are unchanged.

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, Sept. 22

Export Prices f.o.b. Ship at Port of Dispatch—By Cable (or Radio)

	British gross tons U. K. ports		Continental Channel or North Sea ports, metric tons Gold parity, $4.8665	
PIG IRON	£ s d		£ s d	L s d
Foundry, 2.50-3.00 Silicon	$10.15	2 18 6	$ 8.75 to 9.23	1 16 0 to 1 18 0
Basic bessemer	9.37	2 14 0*	6.80	1 8 0
Hematite, Phos. .03-.05	10.41	3 0 0	.....	.....
SEMIFINISHED STEEL				
Billets	$16.92	4 17 6	$9.72	2 0 0
Wire rods, No. 5 gage	26.03	7 10 0	21.87	4 10 0
FINISHED STEEL				
Standard rails	$26.89	7 15 0	$26.73	5 10 0
Merchant bars	.95c	6 2 6	.52c	2 7 6
Structural shapes	1.14c	7 7 6	.44c	2 0 0
Plates, †¼ in. or 5 mm	1.36c	8 15 0	.59c	2 13 6
Sheets, black, 24 gage or 0.5 mm.	1.24c	8 0 0	1.11c to 1.17c	5 1 0 to 5 6 0
Sheets, gal., 24 gage, corr.	1.45c	9 7 6	1.43c to 1.46c	6 10 0 to 6 12 6
Bands and strips	1.20c	7 15 0	.66c to .69c	3 0 0 to 3 2 6
Plain wire, base	1.47c	9 10 0	1.18c	5 7 6
Galvanized wire, base	1.78c	11 10 0	1.38c to 1.40c	6 5 6 to 6 7 6
Wire nails, base	1.71c	11 0 0	1.21c	5 10 0
Tin plate, box 108 lbs.	$ 2.60	0 15 0	$3.20	0 13 2

British ferromanganese $68 delivered Atlantic seaboard, duty-paid. German ferromanganese £9 0s 0d ($43.74) f.o.b.

Domestic Prices at Works or Furnace—Last Reported

	£ s d		French Francs		Belgian Francs		Reich Marks
Fdy. pig iron, Si. 2.5	$10.15	2 18 6	$ 8.04	205(2)	$ 8.45	305	$16.46	69
Basic bessemer pig iron	9.37	2 14 0*	6.86	175(1)	7.64	275	18.01	75.50
Furnace coke	2.08	0 12 0	4.86	124	3.06	110	4.58	19.20
Billets	17.35	5 0 0	14.50	370	10.15	365	23.02	96.50
Standard rails	1.28c	8 5 0	1.25c	697	1.50c	1,150	1.37c	127
Merchant bars	1.03c	6 12 6	.95c	530	.55c	420	1.19c	110
Structural shapes	1.36c	8 15 0	.99c	550	.53c	410	1.16c	104.50
Plates, †¼-in. or 5 mm	1.40c	9 0 0	1.17c	650	.75c	575	1.37c	127
Sheets, black	1.28c	8 5 0§	1.44c	800‡	.85c	650‡	1.56c	144‡
Sheets, galv., corr., 24 ga. or 0.5 mm	1.43c	9 5 0	2.83c	1,570	1.76c	1,350	4.00c	370
Plain wire	1.47c	9 10 0	2.03c	1,130	1.95c	1,500	1.92c	178
Bands and strips	1.47c	9 10 0	1.04c	580	.78c	600	1.37c	127

*Basic. †British ship-plates, Continental, bridge plates. §24 ga. ‡1 to 3 mm. basis price.
British quotations are for basic open-hearth steel. Continental usually for basic-bessemer steel.

Construction and Enterprise

CONCISE, TIMELY BUSINESS BUILDING OPPORTUNITIES IN FIELD OF INDUSTRY

New England

WESTPORT, CONN. — Connecticut Light & Power Co., 107 West Main street, Waterbury, Conn., plans to build a brick and concrete power substation here, for which equipment will be required. Estimated cost is $25,000.

FITCHBURG, MASS. — Independent Lock Co. has bought the Grant yarn mill into which it will move its Prescott street plant and its newly-acquired Lockwood operations from South Norwalk, Conn. The company manufactures hardware and keys. About 150 additional men will be employed in the enlarged plant.

New York

BALLSTON SPA, N. Y.—Dayadeross Hydroelectric Co. has been incorporated with $100,000 capital by Butler, Kilmer, Hoey & Miller, Saratoga Springs, N. Y.

BROOKLYN, N. Y.—Century Iron & Structural Works has been incorporated with $10,000 capital to operate a machine and structural shop, by M. Friedman, 305 Broadway, New York.

LONG ISLAND CITY, N. Y.—La Cour Iron Works, Van Pelt street and Borden avenue, damaged $50,000 by fire. Probably will rebuild.

NEW YORK—Majestic Steel Products Corp. has been incorporated with $10,000 capital, by L. H. Stallman, 1482 Broadway.

NEW YORK—Style Metal Specialties has been incorporated with $20,000 capital to manufacture metal products, by M. K. Hahn, 113 West Forty-second street, New York.

NEW YORK—Levine Bros. Iron Works Corp. has been incorporated with $20,000 capital by S. Schiff, 369 Lexington avenue.

NEW YORK—Everybody's Tool & Die Works Corp. has been incorporated with $20,000 capital by Daly & Salzberg, 271 Madison avenue.

NIAGARA FALLS, N. Y.—International Railway Co. has abandoned and will scrap its 10-mile line on the Canadian side of the river, after operating it for 40 years.

ROCHESTER, N. Y. — Electro-Gas Corp. has been incorporated with $150,000 capital to manufacture gas generators, by T. Corbat, Rochester.

WELLSVILLE, N. Y.—Anticiron Co. Inc., recently incorporated to manufacture silicon iron castings, has leased the Ward foundry building and will start operations as soon as the plant can be prepared. C. D. Campbell is president. (Noted August 29).

New Jersey

JERSEY CITY, N. J.—North Jersey Iron & Steel Corp. has been incorporated with $50,000 capital, by Down & Hefferman, 250 West Fifty-seventh street, New York.

Pennsylvania

OIL CITY, PA.—Wolverine-Empire Refining Co., Reno, Pa., A. W. Scott secretary, will build an addition to its powerhouse, including a 500-horsepower boiler, stoker and conveyor system, to cost about $30,000.

PITTSBURGH—American Bridge Co. has given a contract to the General Contracting Co. to dredge its Ohio river harbor at Ambridge, Pa.

PITTSBURGH — U. S. Engineer's office will take bids until Oct. 14 for construction of locks and dam No. 2 and 3 in the Allegheny river.

PITTSBURGH—Steelcraft Corp. has been incorporated with $10,000 capital to manufacture ornamental and structural steel and iron, by Robin Trimble, 464 Oneida street, Pittsburgh.

SCOTLAND, PA.—Bids will be taken Sept. 28 for a power plant at the soldiers' orphans home here. William H. Dechant & Sons, Reading, Pa., are engineers.

SLIPPERY ROCK, PA.—Commissioners of the state teachers' college, J. L. Eisenberg, president, plan installation of 150-horsepower boiler and automatic stoker among power plant improvements, at cost of about $7000.

Ohio

CLEVELAND—Clark Controller Co., 1146 East 152nd street, is building an addition of 5000 square feet to accommodate operations of the Sundh Electric Co., Newark, N. J., owned by the Clark company for two years and recently moved here.

CLEVELAND—Great Western Oil Co., subsidiary of the Standard Oil Co., has bought 5¾ acres on the lake front for a marine bulk oil terminal which will cost $500,000. First construction will be a 6,000,000-gallon steel storage tank, to be followed by one of 4,000,000 gallons capacity and two of 1,000,000 gallons each. Warehouse, pumphouse and office building will be built.

TOLEDO, O.—Piston Ring Co. is making plans to open a Canadian plant at

(*Please turn to Page* 87)

CADUX CADMIUM PLATING

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HANSON-VAN WINKLE-MUNNING COMPANY, MATAWAN, N.J.

Equipment

FIRST reports of tangible improvement in machinery and equipment business emanate from more than one industrial center. Inquiry is active at Pittsburgh for 3-high and 4-high mills and other equipment for a Steel Corporation subsidiary on a $2,500,000 appropriation. A truck builder is reported in the market for a fair list of machinery. A number of small plants are reappearing in the market for miscellaneous equipment after an absence of six months or more, indicating resumption of some manufacturing programs, at least on a small scale. With a few exceptions, general tone of the market is decidedly cheerful. Further gains are anticipated in October.

Pittsburgh—Interest is centering on the largest active inquiry here which is for the two 3-high and two 4-high mills for the American Sheet & Tin Plate Co. Prices have been asked and submitted for consideration at New York. It is reported that approximately $2,500,000 has been appropriated for work for this subsidiary of the United States Steel Corp. and it is probable that aside from the rolling mills some new furnaces and run-out tables will be purchased. However, this sum of $2,500,000 is reported to be but half of the appropriation asked for. Other buying of steel mill equipment may develop as a few smaller inquiries appear to be more active.

Machinery inquiry is improving decidedly with more interest the past week or ten days than in some several months previously. However, all the machinery buying appears to be predicated on some new manufacturing program which means that actual machinery orders may be slow to develop. A large builder of steel mill equipment has just announced a new magnetic uncoiler for use in the cold strip mill (see p. 25).

Worcester, Mass. — Improvement in machinery demand is limited to textile equipment builders, a better demand for machine parts and a scattering of government orders. There has been no broad increase in buying or inquiry and sales to industrial plants are rarely more than one tool at a time. Lynd-Farquhar Co., Boston, is low on a boring, milling and drilling machine for the Portsmouth, N. H., navy yard with a bid of $6092, bids Sept. 20. Swind Machinery Co. is low on a tool-cutter grinder for the same point. Waterbury-Farrel Foundry & Machine Co. booked a case drawing press for the Frankford, Pa., arsenal at $3500.

New York—Board of Transportation, New York, has closed on a small list of machine tools and a larger number of small tools and parts. The general tone of the market for equipment remains unchanged with buying light and inquiry small. Bids closed last week on 21 machines for navy shops at Mountainview, Calif., with more closing this week. On government requirements for the East, Niles Tool Works is low on a metal planer for Philadelphia with a bid of $14,430. Henry Pels & Co. is low on a punch and shear for Brooklyn and Canedy-Otto Mfg. Co., Chicago, on a radial drill for the same shops.

Cleveland—The past week has shown unmistakable evidence of improved conditions in the machinery and equipment fields. Inquiries are being received in better volume and a number of fair-sized orders for machinery have been booked. A truck interest here is understood to be in the market for cylinder boring and crankcase machining equipment, closing soon on a moderate list. September sales totals will show considerable increase over July and August, several sellers reporting that this month will be the best of the year. Prospects for October business are bright, predictions being for a further improvement over September. A builder of welding equipment reports renewed interest in buying from a number of small plants, many of which have been out of the market for six months or more, indicating that these plants are preparing to increase or resume operations to fill current orders.

Chicago—Small gains are noted in sales of machine tools and plant equipment, while inquiry also continues to expand. Some equipment closed on had been pending for a number of months and sales usually represent equipment that is urgently needed. Inquiry is spotty and the railroads still show a lack of interest in purchase of new equipment. Sales of used machinery recently have been fairly active, indicating the desire of users to conserve cash as much as possible. Demand for repair parts also has shown more life. Activity in small tools is little changed, but has shown no further decline. A number of inquiries being received are for price determination purposes primarily, with only small prospect of early purchases.

New Service Offered To Reduce Tool Costs

A new plan to reduce the cost of Carboloy cemented carbide metal cutting tools recently has been announced by the Carboloy Co. Inc., Detroit. The plan incorporates what is termed "milled and brazed service." Milled and brazed tools are the same as the regular finished tools except that they require a small amount of grinding to put into operation. By taking advantage of this service, the user can obtain tools at less than the regular finished tool price and save a large part of the difference in cost.

Although the service has just recently been announced, it has been in use for an extended period of time by a number of representative plants and the economical results obtained indicate that it can be adopted profitably by both large and small users of cemented carbide tools.

Crane Shipments Improve

New York—Shipments and new orders increased during August, but unfilled orders Sept. 1 were lower, according to the monthly report of the Overhead Electric Crane institute. Twelve units were shipped with a tonnage capacity of 140½, valued at $50,674. This compares with five units shipped during July with a tonnage capacity of 41½, valued at $17,648.

New orders last month reached eight, with a tonnage capacity of 61½, valued at $36,605. In July there were but five cranes booked, with a tonnage capacity of 23, valued at $12,998.

Unfilled orders Sept. 1 included 22 units, tonnage capacity 902½, valued at $400,703. On Aug. 1 unfilled business included 29 cranes, tonnage capacity 887½, valued at $422,341.

Hoist Orders Up 53 Per Cent

New York—Members of the Electric Hoist Manufacturers' association report the number of hoists ordered during August increased 53.061 per cent, compared with the previous month, and the value of such orders increased 87.565 per cent as compared with July. Shipments were 70.606 per cent heavier in August than in July.

National Metal Week in Buffalo

Oct. 3-7, 1932

—Etching by Charles Ferry Weimer, Orange, N. J.

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CONTINUED LEADERSHIP

Visit the Republic Exhibit at the Buffalo show—and bring your troubles with you. The representatives in Booth C-10 will be there to help you.

IN THE MAKING OF SPECIAL PURPOSE STEELS

SINCE the introduction of the first Agathon Steels in the early days of the alloy industry, the leadership of their sponsor in the field of fine alloy making has never been questioned.

Continued research has kept Republic apace with the needs of industry, so that today this organization, with a skill and experience unquestionably without parallel, is the world's largest producer of quality alloy steels.

Agathon Alloy Steels are made in both electric and open hearth furnaces in all combinations of alloying elements and are supplied in ingots, billets, hot rolled, heat treated or cold drawn bars, sheets and strip, and in die rolled and special shapes.

Two other developments of Republic worthy of special mention are ENDURO Stainless Steel made in a wide variety of analyses to fit every need, and Toncan Copper Molybdenum Iron, an alloy that ranks first among the ferrous materials in its resistance to rust, after the stainless irons and steels, and that has, because of its price advantage, a wide application in industry in the form of sheets, plates, strip and pipe.

Republic maintains a staff of metallurgists whose business it is to take your problems and solve them. A letter will place their services at your disposal.

CENTRAL ALLOY DIVISION

REPUBLIC STEEL CORPORATION

MASSILLON, OHIO

J & L PRESENTS

The Jones & Laughlin Steel Corporation extends to all delegates and visitors to the National Metal Congress and Exposition, a cordial invitation to visit its exhibit of J & L Steel Products in Space No. E-18. Practically the complete J & L Steel line will be represented by the various samples of Jones & Laughlin products and examples of the work for which different manufacturers are using them. J & L exhibits which will be of particular interest to members of the American Society for Steel Treating, and of the societies associated with it in the National Metal Congress, are as follows:

JALCASE STEEL. Two large display boards, one showing examples of the work for which hot rolled Jalcase is being used, and the other containing cold finished Jalcase sample bars, test specimens and samples of parts made of cold finished Jalcase.

J & L SCREW STEELS. A display board containing sample bars of cold finished bessemer screw steel and samples of parts made of cold finished bessemer screw steel, J & L special high sulphur bessemer screw steel, J & L S.A.E. 1020, J & L S.A.E. 1120 and J & L S.A.E. 1045 steels.

J & L SHAFTING. Samples of four sizes of of J & L Turned and Ground Shafting. (J & L also manufactures turned and polished, cold drawn, and special finish shafting).

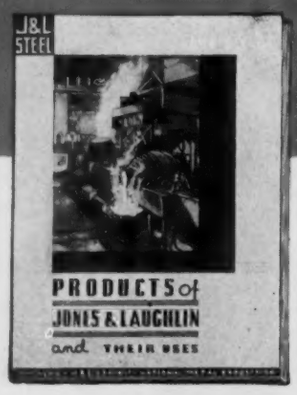
WIDE COLD ROLLED FLATS. Samples of this J & L product which is made in widths to 12″ and thicknesses to 2½″.

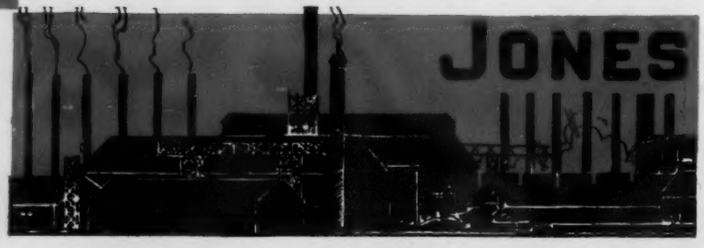
J & L WIRE PRODUCTS. Three display boards showing (Board No. 1) J & L Standard spring wire and a variety of springs made of this product, (Board No. 2) J & L cold heading wire and examples of the work for which manufacturers are using it, and (Board No. 3) J & L wire rods, bright wire, galvanized wire and J & L spikes, nails and staples.

J & L TIN MILL PRODUCTS. A board containing samples of J & L sheet bar, pickled and annealed black plate, one pass cold rolled black plate, full finished black plate and J & L coke tin plate, and a display of containers made of J & L tin mill products.

Other products represented in the exhibit include J & L steel pipe, J & L light weight channels, J & L Junior Beams, J & L steel piling and J & L diamond bars for concrete reinforcement.

JUST OFF THE PRESS—*This 12-page illustrated booklet contains a detailed description of the* Jones & Laughlin *exhibit at the National Metal Exposition. It will be helpful to you in making the most of your visit to the* J & L *space, No. E-18. Send for your copy. There is no obligation.*

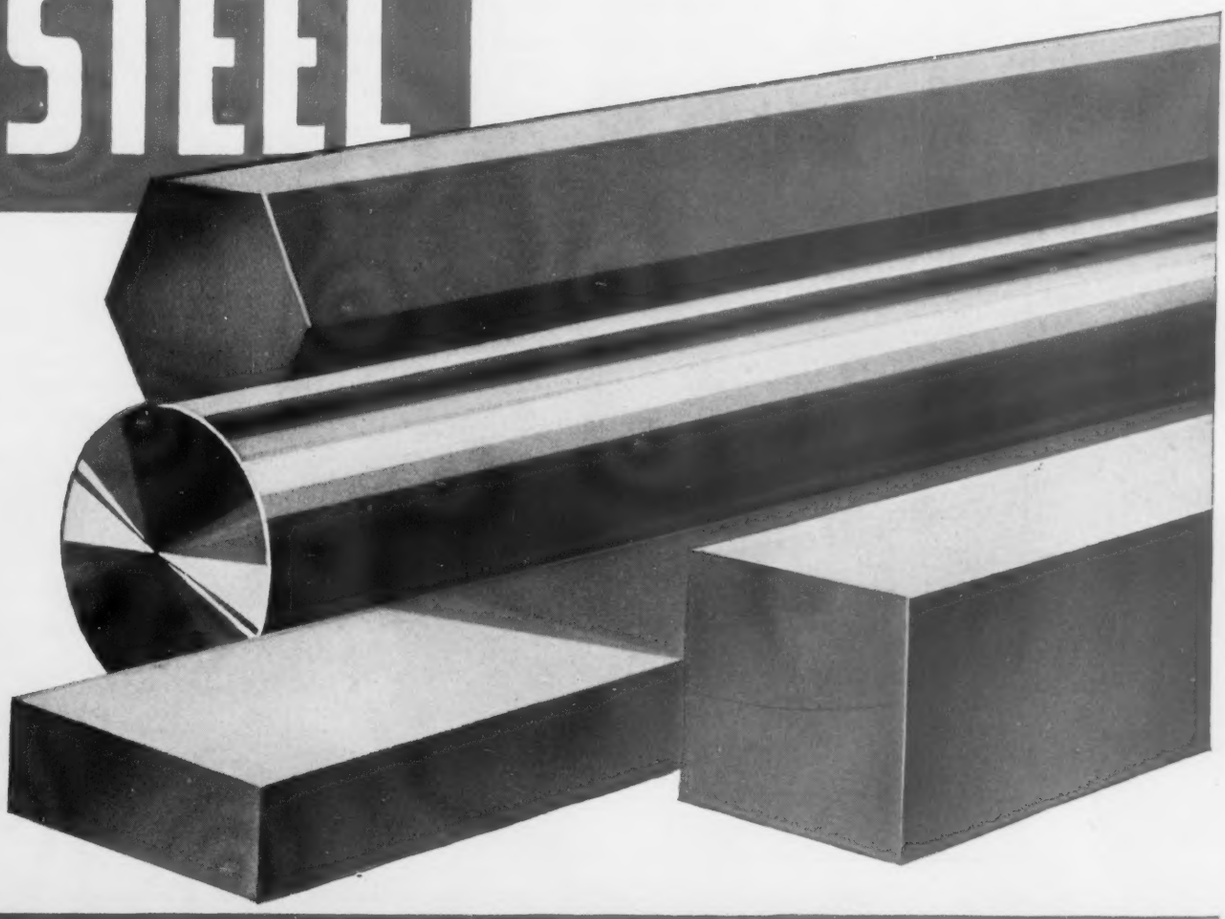




AN EXHIBITION OF JONES & LAUGHLIN PRODUCTS OF INTEREST TO THOSE ATTENDING THE NATIONAL METAL EXPOSITION • BUFFALO · OCTOBER 3-7

J&L STEEL

SPACE
E-18



& LAUGHLIN STEEL CORPORATION

AMERICAN IRON AND STEEL WORKS

JONES & LAUGHLIN BUILDING, PITTSBURGH, PENNSYLVANIA

Sales Offices: Atlanta Boston Buffalo Chicago Cincinnati Cleveland Dallas Detroit Erie Los Angeles Memphis Milwaukee New Orleans New York Philadelphia Pittsburgh St. Louis San Francisco

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THE CLEVELAND CUTTER & REAMER COMPANY

Famed Makers of Fine Tools

THE CLEVELAND CUTTER & REAMER COMPANY

TOOLS OF QUALITY

Madison Ave. at W. 74th St.

Cleveland, O Jan. 20, 1932.

Globar Corp.,
Niagara Falls, N. Y.

Att: Mr. K. E. Rogers

Gentlemen:

In answer to your request we are glad to advise that the C. I. Hayes Globar equipped High Speed Furnace together with the C. I. Hayes preheat furnace, both of which we have had in service for some time, have more than fulfilled the claims made for this equipment.

Since installing these furnaces we have improved our work in the following ways.

1. We maintain our tolerance within tenths of thousandths, day after day.
2. We have increased the production of our hardening room 20% to 50%.
3. We have entirely eliminated tool losses due to faulty heat treatment.
4. We find that we can maintain a more uniform Rockwell hardness from day to day than with our former methods of heat treating.

Our reputation as manufacturers of Tools of Quality demands that we use only the finest equipment and materials. Therefore we have installed Hayes Globar equipped furnaces to keep in step with the ever increasing demand for higher quality of tools.

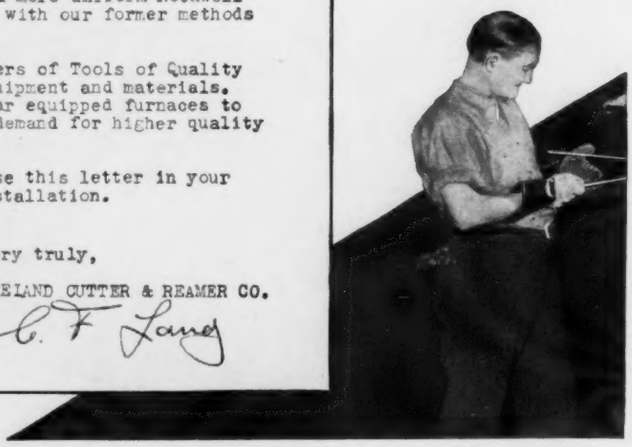
You have our permission to use this letter in your advertising with photographs of the installation.

Yours very truly,

THE CLEVELAND CUTTER & REAMER CO.

Per C. F. Lang

EEK



INVESTIGATE ELECTRIC HEAT

GLOBAR CORPORATION

(A SUBSIDIARY OF THE

PACIFIC ABRASIVE SUPPLY CO., SAN FRANCISCO AND LOS ANGELES
WILLIAMS AND WILSON, LTD., MONTREAL–TORONTO, CANADA

—MAINTAIN THEIR QUALITY STANDARDS WITH ELECTRIC HEAT AND "GLOBAR"

REG. U.S. PAT. OFF.

QUALITY is more than a slogan—it's a creed in the plant of The Cleveland Cutter & Reamer Company, makers of high speed cutters, reamers, broaches and special tools. And to produce such quality—to maintain and control quality standards—there must be proper heat treatment. From the letter, reproduced on the page opposite, you will note that "Globar" Equipped Hayes Electric Furnaces have "more than fulfilled the claims made for this equipment."

Note, too, the four forceful statements regarding the improvement in results—the increased production in their hardening room.

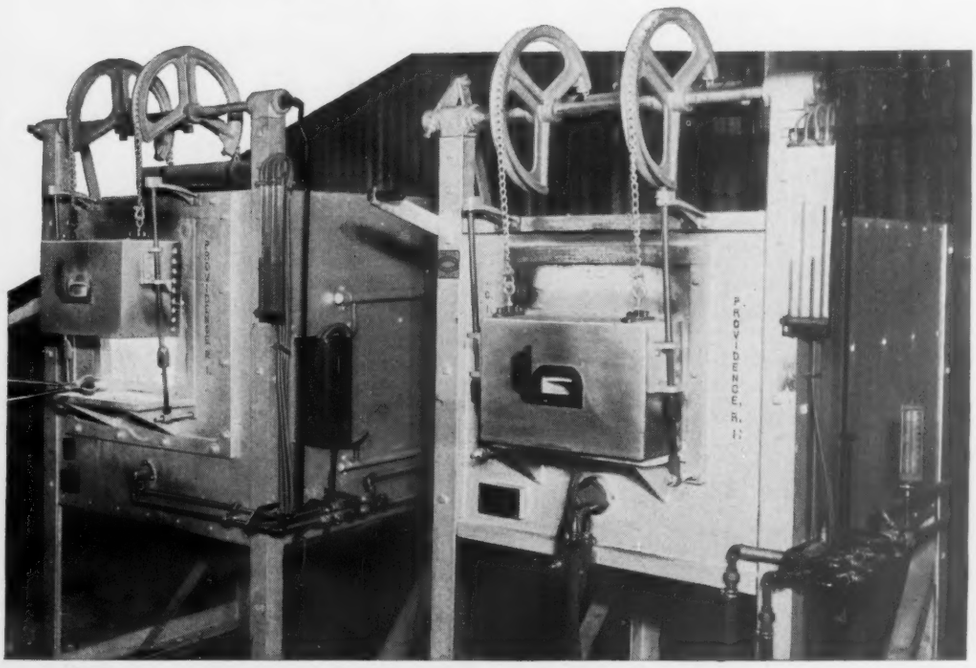
In the hardening furnace they are able to maintain perfectly controlled temperatures up to 2500° F.—uniform temperatures that mean so much in the efficient treatment of steel.

Frankly, without the use of Globar Brand Non-Metallic Elements such high temperatures—such uniformity—such close control wouldn't be possible.

Globar Brand Elements are therefore all important factors in helping to maintain The Cleveland Cutter & Reamer Company's high quality standards—just as they are in many other electric furnace installations.

VISIT THE "GLOBAR" EXHIBIT NATIONAL METAL EXPOSITION BUFFALO

TECHNICAL BULLETINS ON CHARACTERISTICS AND USES OF "GLOBAR" SENT ON REQUEST



Globar

REG. U. S. PAT. OFF.

Globar is the Registered Trade Name given to Non-Metallic Electrical Heating and Resistance Materials, and to Other Products of Globar Corporation, and is its Exclusive Property

NIAGARA FALLS, N. Y.

CARBORUNDUM COMPANY)

STEINMETZ & COMPANY, PHILADELPHIA AND NEW YORK
BRITISH RESISTOR COMPANY, LTD., MANCHESTER, ENGLAND

No, this isn't a scene at the Olympic Games in Los Angeles . . . champions don't act that way. Our photographer has produced a business allegory here which portrays a type of business management considerably in evidence today. No sprinter knows exactly when the pistol will fire, but winning sprinters never dilly-dally around the starting line on that account.

•

The sitting-down-to-sprint-later type of management will be noticeable by its absence when the 1932 Metal Congress and Exposition open in Buffalo on October 3. ¶ Management which refuses to be caught off guard by competition will be there with open ears and active eyes to soak up the results of the startling research accomplishments of 1932 in the metal industries.

PARTICIPANTS

in the world's greatest annual event in the metal industries include: American Welding Society; Iron & Steel Division, A.I.M.E.; Institute of Metals Division, A.I.M.E.; Iron & Steel Division, A.S.M.E.; Machine Shop Practice Division, A.S.M.E.; Production Activity Division, S.A.E.; Wire Association; Drop Forging Institute; American Society for Steel Treating.

PLACE

At Buffalo, in the 174th Regiment Armory, with its 75,000 sq. ft. of unobstructed exhibit space. Buffalo, with Niagara Falls only 40 minutes distant, and Canada just across Peace Bridge, is an ideal convention city.

PREPAREDNESS ASSEMBLY

NATIONAL METAL CONGRESS AND EXPOSITION

BUFFALO, N. Y. • OCTOBER 3 TO 7, 1932

THE 174th Regiment Armory in which the 1932 National Metal exposition will be held, Oct. 3-7. This building has a large arena free from pillars and other obstructions and is well adapted to exhibition use. It also has meeting rooms and many afternoon sessions will be held here

NATIONAL METAL CONGRESS AND SHOW AFFORD ACTIVE WEEK IN BUFFALO

BUFFALO has only to cite its position in the metalworking industries to justify its selection for the 1932 National Metal Week. These industries, including blast furnaces, mills, foundries, forges and engineering plants, support a bulky portion of this city's population. In a normal year the metal trades employ nearly 24,000 workers with annual earnings exceeding $37,000,000. With 13 plants engaged in the manufacture and rolling of steel and with 134 foundries and machine shops depending upon this metal, steel is one of Buffalo's greatest industries.

Perhaps nowhere in America are the basic elements of steel and hydroelectricity so advantageously merged as on the Niagara Frontier—at the world's greatest source of hydroelectric energy. The growth of the steel industry and the development of electric power have been largely responsible for Buffalo's front rank position among industrial cities. For this reason it is proper that the Fourteenth National Metal congress and exposition should be held in Buffalo, Oct. 3-7. Originator of the Metal Week idea and chief sponsor is the American Society for Steel Treating, but co-operating again this year are the American Welding society, Iron and Steel and Institute of Metals divisions of American Institute of Mining and Metallurgical Engineers, Machine Shop Practice division of the American Society of Mechanical Engineers, and Production Activity division of the Society of Automotive Engineers. Participating this year for the first time are the American Drop Forging institute and the Wire association.

Hotel Statler will be headquarters for all societies participating in the National Metal congress

The American Society for Steel Treating will maintain its headquarters in Hotel Statler and all morning sessions will be held there. Afternoon sessions will be held at the 174th Regiment Armory. Technical sessions are scheduled

for both morning and afternoon for the five days and a total of 29 technical will be presented.

Among the subjects which will be considered at the various technical sessions are heat treating of steel, deep etch testing, research, drop forging, sheet and strip steel, high speed steels, and corrosion resisting steels. Three sessions will be devoted to research. The Tuesday afternoon session on drop forging will be attended by members of the American Drop Forging institute.

Officers To Be Nominated

The annual meeting of the Steel Treaters will be held Wednesday morning at which time officers will present their reports and the nominating committee will submit its nominations for officers for 1933. At the conclusion of this meeting, Edgar C. Bain, research laboratories, United States Steel Corp., Kearny, N. J., will deliver the 1932 Campbell Memorial lecture on the subject "Factors Affecting the Inherent Hardenability of Steel."

Present officers of the society are: President, A. H. d'Arcambal, sales manager of small tools, Pratt & Whitney Co., Hartford, Conn.; vice president, W. B. Coleman, president W. B. Coleman Co., Philadelphia; secretary, W. H. Eisenman, Cleve-

Program of Papers for Steel Treaters

Monday, Oct. 3

10:00 A.M.—HOTEL STATLER BALLROOM

Heat Treating of Steel

"Observations on the Effect of Normalizing Medium Manganese Steels on the Microstructure and Physical Properties," by C. R. Austin, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

"Scaling of Steel at Heat Treating Temperatures," by Clair Upthegrove, University of Michigan, Ann Arbor, Mich.

"A Low Internal Stress Heat Treatment," by Charles W. Briggs, United States Naval Research Laboratory, Anacostia, D. C.

2:30 P.M.—174TH REGIMENT ARMORY

Deep Etch Testing

"Development and Application of Macro-etching," by H. G. Keshian, Chase Cos. Inc., Waterbury, Conn.

"Preparation of Specimens for Deep Etching, Etching Reagents, Time and Temperature of Etching," by M. Yatsevitch, Watertown Arsenal, Watertown, Mass.

"Routine Disk Inspection of Quality Steel Manufacture," by G. V. Luerssen, Carpenter Steel Co., Reading, Pa.

"An Interpretation of the Deep Acid Etch Test as Applied to Tool Steels," by J. P. Gill and H. G. Johnstin, Vanadium Alloys Steel Co., Latrobe, Pa.

Tuesday, Oct. 4

10:00 A.M.—HOTEL STATLER BALLROOM

Research

"Transformation in the Carbide Phase During Graphitization," by H. A. Schwartz and C H. Junge, National Malleable & Steel Castings Co., Cleveland, and Kent. R. Van Horn, Aluminum Co. of America, Cleveland.

"The Role of Nickel in Nitriding Steels," by H. J. French, International Nickel Co., New York, and V. O. Homerberg, Massachusetts Institute of Technology, Cambridge, Mass.

"Creep Characteristics of Metals at Elevated Temperatures," by A. E. White and C. L. Clark, University of Michigan, Ann Arbor, Mich.

2:30 P.M.—174TH REGIMENT ARMORY

Drop Forging

"Further Experiments on the Forgeability of Steel," by O. W. Ellis, Ontario Research Foundation, Toronto, Ont.

"Behavior of Steel in Sulphur-Containing Atmospheres at Forging Temperatures," by D. W. Murphy, University of Michigan, Ann Arbor, Mich.

"Heating Steel for Forging," by R. E. Waldron, Dominion Forge & Stamping Co., Walkerville, Ont., and N. L. Deuble, Republic Steel Corp., Massillon, O.

"Drop Forging Practice," by Adam Steever, Great Lakes Forge Co., Chicago.

Wednesday, Oct. 5

10:00 A.M.—HOTEL STATLER BALLROOM

Annual meeting of American Society for Steel Treating.

"Factors Affecting the Inherent Hardenability of Steel," Campbell Memorial Lecture by Edgar C. Bain, research laboratories, United States Steel Corp., Kearny, N. J.

2:30 P.M.—174TH REGIMENT ARMORY

Sheet and Strip Steel

"Factors Influencing the Annealing of Cold Rolled Strip Steel," by G. R. Brophy and L. L. Wyman, General Electric Co., Schenectady, N. Y.

"Autographic Stress-Strain Curves of Deep Drawing Sheets," by Reid L. Kenyon and Robert S. Burns, American Rolling Mill Co., Middletown, O.

"Principles of Lubrication in Cold Drawing Sheet Steel," by H. A. Montgomery, H. A. Montgomery Co., Detroit.

"Age Hardening in Low Carbon Strip Steel," by Earle B. Whittemore, Wickwire Spencer Steel Co., Worcester, Mass.

Thursday, Oct. 6

10:00 A.M.—HOTEL STATLER BALLROOM

High Speed Steels

"Cobalt-Tungsten System," by W. P. Sykes, General Electric Co., Cleveland.

"The Temperature Atmosphere Problem in High Speed Steel," by Sam Tour, Lucius Pitkin Inc., New York.

"Some Molybdenum High Speed Steels," by J. V. Emmons, Cleveland Twist Drill Co., Cleveland.

2:30 P.M.—174TH REGIMENT ARMORY

Research

"Allotrophy in Iron and Steel," by R. H. Harrington, General Electric Co., Schenectady, N. Y., and William P. Wood, University of Michigan, Ann Arbor, Mich.

"Hardening Transformation in Manganese Steels," by Howard Scott and J. G. Hoop, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

Friday, Oct. 7

10:00 A.M.—HOTEL STATLER BALLROOM

Research

"A Simple Cutting Tool for Measuring Pressures in the Direction of Cut," by O. W. Boston and C. E. Kraus, University of Michigan, Ann Arbor, Mich.

"Alloys of Iron, Manganese and Carbon," by Francis M. Walters, Cyril Wells, John F. Eckel and V. N. Krivobok, Carnegie Institute of Technology, Pittsburgh.

"Internal Friction in Iron and Iron Alloys," by R. S. Canfield, United States Naval Research Laboratory, Anacostia, D. C.

2:30 P.M.—174TH REGIMENT ARMORY

Corrosion Resisting Steels

"Manufacture of Stainless Steels," by E. R. Johnson and Robert Sergeson, Republic Steel Corp., Massillon, O.

"Design of Heat-Resisting Alloy Members and Their Performance in the Field," by Ralf S. Cochran, Surface Combustion Corp., Toledo, O.

"Corrosion Resistance of Chromium-Iron Alloys in Various Media—The Salt Spray Test," by William B. Arness and J. N. Ostrofsky, Alloy Research Corp., Baltimore.

A. H. d'Arcambal
President, American Society for Steel Treating

land; and treasurer, A. T. Clarage, Columbia Tool Steel Co., Chicago Heights, Ill.

The society's annual dinner will be served on Thursday evening in Hotel Statler. At this time award of the Henry Marion Howe medal will be announced, and the Past President's medal presented to J. M. Watson, president of the society in 1931. The principal speaker at the dinner will be Dr. Frederick B. Fisher, Ann Arbor, Mich., who will discuss world affairs.

Visitors in Buffalo during the week will have an opportunity to visit a number of industrial plants. A schedule of visitations has been announced as shown on this page.

110 Exhibits in Show

The 176th Regiment Armory affords splendid facilities for the National Metal exposition, for it has a large unobstructed arena free from pillars. Approximately 110 companies will be represented with exhibits, and a considerable portion of the equipment will be operating.

One section of the show will be devoted to gas furnaces and appliances, another to electric furnaces and equipment and still another to welding apparatus. Other important divisions will include steels and steel products, nonferrous metals, heat treating materials, cleaning compounds, heat control apparatus, metallurgical and physical testing devices, cutting alloys, castings, refractories, abrasives and machine tools.

A list of exhibitors and their booth locations will be found on Page 80.

W. B. Coleman
Vice President, American Society for Steel Treating

Arrange Visitations To Buffalo Industrial Plants

VISITORS to the National Metal congress and exposition will have an opportunity to visit a number of industrial plants in Buffalo and vicinity. Eleven plants are opening their doors and a schedule has been arranged to afford inspections on four days. Buses for Buffalo plants will leave Hotel Statler at 9:15 a.m.; for Niagara Falls plants, they will leave at 8:15 a.m. The schedule is as follows:

Tuesday, Oct. 4

Bliss & Laughlin Inc. Visitors will see modern equipment for cold drawing rounds, squares, hexagons and flats; turning mills for machining large rounds to size; and centerless grinders for producing rounds to accurate size and with highly polished surfaces. The plant has up-to-date facilities for pickling, straightening, polishing and cutting.

American Brass Co. Electric furnace melting of copper, zinc, lead and tin for brasses and bronzes and rolling and drawing of these metals into sheets and tubes will be seen.

Pratt & Letchworth Co. This is a modern malleable and steel foundry with facilities for melting, rolling, carburizing and heat treating. It has a small forge shop and a new spring plant for making hot-wound coil springs; the latter operates only at night, but arrangements for visiting it can be made.

Wednesday, Oct. 5

Bethlehem Steel Co. The plant is complete and modern with blast furnaces, bessemers and open hearths. Twelve rolling mills produce blooms, billets, sheet bars, rails, structural shapes, plates and bars.

Niagara Falls Trip

U. S. L. Battery Co. This is a complete plant for manufacturing storage batteries, car lighting equipment and electric welding apparatus.

Niagara Falls Power Plant. With a capacity of nearly 500,000 horsepower, this is the largest hydroelectric plant in the world.

Thursday, Oct. 6

Republic Steel Corp. Equipment includes two blast furnaces, nine open hearths, a 38-inch blooming mill, an 18-inch continuous billet mill, 10 and 14-inch bar mills, cold drawing and die rolling departments.

Buffalo Bolt Co. Capacity to make 1,500,000 bolts and 2,500,000 nuts is installed in this plant. Rolling and wire mills, cold heading and punching, hot forging and punching, automatic pointing, threading and nutting, heat treating, electro zinc, cadmium and lead plating, hot galvanizing, parkerizing, machine shop and tool making departments are maintained.

Friday, Oct. 7

Curtiss Aeroplane & Motor Corp. Military planes are produced in this plant, the largest in the country devoted exclusively to aircraft. It has the largest commercial wind tunnel.

Pierce Arrow Motor Car Co. Visitors will see the machining divisions, tool room, engine assembly, body building, interior trim, paint and final assembly departments.

Seneca Iron & Steel Co. This is a well-equipped sheet mill with a capacity of 15,000 tons per month of black, deep drawing, furniture and full finished auto body sheets. About 70 per cent of production is auto body grade.

Welding Society To Consider Problems of Merchandising

FOR the sixth consecutive year the American Welding society holds its fall meeting during National Metal week. Sessions of this organization will begin Monday afternoon, Oct. 3, and continue through Thursday afternoon, Oct. 6.

Morning sessions will be conducted in Hotel Statler and afternoon sessions in the 174th Regiment Armory. Twenty-four technical papers covering a wide range of subjects devoted to welding equipment, welding technique and welded products are scheduled for presentation.

The Tuesday afternoon meeting will be devoted to fundamental research in welding and will be conducted under the auspices of the American Bureau of Welding, the research division of the society.

The only evening session will be held Tuesday evening and this also is sponsored by the American Bureau of Welding. It will constitute an informal conference on the fundamentals of welding for the benefit of university research workers.

Merchandising of welded products will be considered at a session on Wednesday morning with three papers on that subject listed for presentation.

The annual dinner and dance will be the principal social event and has been arranged for Wednesday evening.

Frank P. McKibben, consulting engineer, General Electric Co., Black Gap, Pa., is president of the American Welding Society.

Announcement is made that the Samuel Wylie Miller medal will be presented to President McKibben at the annual dinner for his outstanding work in the structural welding field.

The program for the welding society is as follows:

Monday, Oct. 3

Registration—Facilities in Hotel Statler will be provided throughout the week from 9:30 a.m. to 5:00 p.m.

1:45 P.M.—174TH ARMORY

Address of Welcome.

"Welded Rolled Steel Design for the Iron and Steel Industries," by Christian A. Wills, William B. Pollock Co., Youngstown, O.

"Conditioning, Shaping and Machining of Carbon Steel with Oxygen," by H. H. Moss, Linde Air Products Co., New York.

"Oxyacetylene Cutting as Applied to Railroad Car and Locomotive Scrapping," by W. H. Ludington, Air Reduction Sales Co., New York.

6:30 P.M.—HOTEL STATLER

Dinner meeting of board of directors.

Tuesday, Oct. 4

9:45 A.M.—HOTEL STATLER

Welding Nonferrous Metals

"Welding of Duralumin," by a representative of Union Carbide & Carbon Research Laboratories, Long Island City, N. Y.

"Welding of High Nickel Alloys," by J. G. Shoener and F. G. Flocke, International Nickel Co., New York.

"Lead Burning or Welding," by R. L. Ziegfeld, Lead Industries Association, New York.

"Influence of a Magnetic Field Parallel to the Iron Arc on Welding," by F. R. Hensel and W. A. Maddox, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

2:00 P.M.—174TH ARMORY

Fundamental Research in Welding

"On the X-Ray Determination of Stresses in Welds," by John T. Norton, Massachusetts Institute of Technology, Cambridge, Mass.

"Metal Deposition in Electric Arc Welding," by G. E. Doan, Lehigh university, Bethlehem, Pa., and J. M. Weed, General Electric Co., Schenectady, N. Y.

"Corrosive Fatigue Study of Welded Low-Carbon Steel," by W. E. Harvey and F. Jerome Whitney Jr., Lehigh university, Bethlehem, Pa.

"Distribution of Stresses in Welded Butt-Strap Joints," by S. C. Hollister and A. S. Gelman, Purdue university, Lafayette, Ind.

7:30 P.M.—HOTEL STATLER

Conference and meeting of Fundamental Research committee, American Bureau of Welding. H. M. Hobart, chairman, presiding. This conference is scheduled for the benefit of university research workers in the fundamentals of welding.

Wednesday, Oct. 5

9:45 A.M.—HOTEL STATLER

Merchandising

"Application of Welding to the Manufacture of Heavy Mechanical Equipment," by A. E. Gibson, Wellman Engineering Co., Cleveland.

"Selling Welded Products," by T. C. Fetherston, Linde Air Products Co., New York.

"Popularizing the Welded Product," by G. M. Gillen, G. M. Basford Co., New York.

2:00 P.M.—174TH ARMORY

"Pre-qualification Tests of Welders," by E. Lunn, consulting engineer, Chicago, and chairman of former committee on qualification of welders.

Discussion of Mr. Lunn's paper by H. E. Rockefeller, Linde Air Products Co., New York, and A. Vogel, General Electric Co., Schenectady, N. Y.

"Qualification Requirements for Welders," by V. P. Marran, Walsh Holyoke Steam Boiler Works Inc., Holyoke, Mass.

"The Chemistry of Low-Carbon Metal Arc Weld Metals," by J. C. Hodge, Babcock & Wilcox Co., Barberton, O.

Discussion of Mr. Hodge's paper by G. R. Brophy, General Electric Co., Schenectady, N. Y.

6:30 P.M.—HOTEL STATLER

Annual dinner dance in Terrace Room.

Thursday, Oct. 6

9:45 A.M.—HOTEL STATLER

"Load Test on a Welded Roof Truss," by C. H. Jennings, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

"Metal Spraying," by H. B. Rice, Metal Spray Co.

"Automobile Repair Welding," by A. F. Keogh, Sound Welding Co. Inc., New York.

"Advantages of Control for Resistance Welding," by W. C. Hutchins, General Electric Co., Schenectady, N. Y.

2:00 P.M.—174TH ARMORY

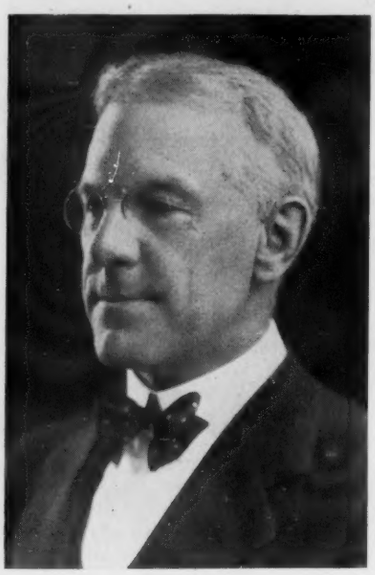
"Application of Welding to Pressure Vessels and Metallurgy of Welds," by P. R. Hawthorne and J. C. Holmberg, Struthers-Wells Co., Warren, Pa.

"Welding of Pressure Vessels," by H. L. R. Whitney, M. W. Kellogg Co., New York.

"Automatic Welding with Heavy Coated Electrodes," by L. R. Leveen, General Electric Co., Schenectady, N. Y.

Friday, Oct. 7

Plant Visitation.



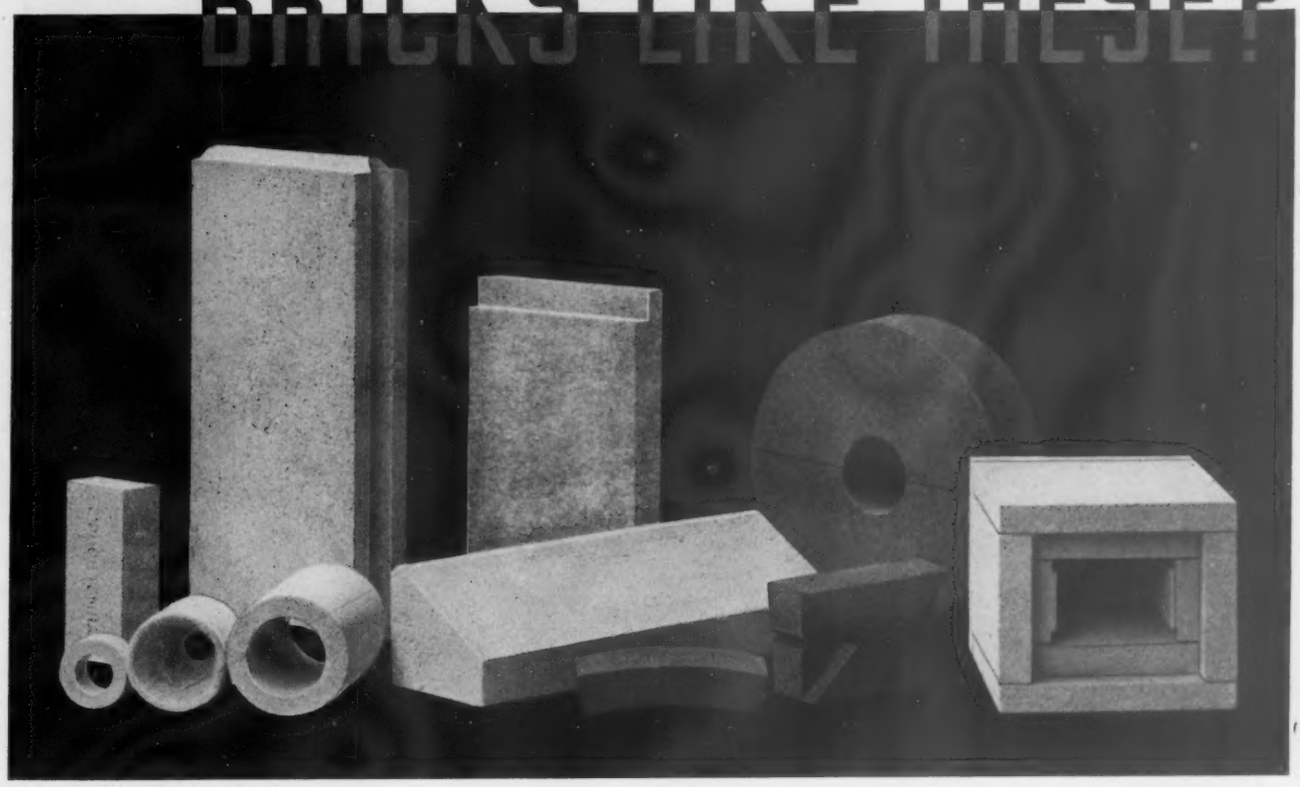
F. P. McKibben
President, American Welding Society

STEEL at the Metal Show

THROUGHOUT the National Metal exposition STEEL will maintain headquarters in Booth D-12 which will be fitted up as a rest room for the convenience of visitors. Publications of the Penton Publishing Co., including STEEL, *Daily Metal Trade*, *The Foundry*, *Machine Design*, *Automotive Abstracts* and *Abrasive Industry* will be available here. Representatives in attendance will be: E. L. Shaner, editor; E. F. Ross, associate editor; A. H. Allen, associate editor; J. D. Knox, associate editor; H. B. Veith, editorial representative; G. O. Hays, business manager, S. H. Jasper, Pittsburgh manager, E. W. Kreutzberg, advertising representative; R. C. Jaenke, advertising representative; and J. D. Pease, vice president.

Have you ever seen

BRICKS LIKE THESE?



They are a few of Armstrong's specially made insulating brick

IN designing special heat treating equipment do not neglect insulation because of the intricacies or special shape of the equipment. You can solve the insulation problem with the specially shaped and sized insulating brick that Armstrong makes!

These special brick are composed of exactly the same materials used in Armstrong's and Nonpareil Insulating Brick. They are burned with the same care, to stand the same high temperatures.

Only a few shapes are shown above. Practically any brick can be made in sizes up to 12″ x 18″ x 3″ for Armstrong's Brick—12″ x 24″ x 4″ for Nonpareil. For larger sizes, get in touch with our Engineering Department.

Armstrong's Insulating Brick are made to stand high temperatures—up to 2500° F. Nonpareil Brick are recommended for use up to 1600° F. Both are usually installed behind the fire brick wall. Their crushing strength is high. They are machine-sized on all faces. Delivery from Beaver Falls, Pa., is prompt to any part of the country. Because of the central location of the factory, in most instances bulk shipments can be made in quantities much below the minimum carload of 15,000 Nonpareil or 13,000 Armstrong's Brick at a saving.

If you would like to examine Armstrong's and Nonpareil Insulating Brick, write for samples. We'll send technical data, also, without obligation. Armstrong Cork & Insulation Company, 920 Concord Street, Lancaster, Pennsylvania; Canadian offices in Montreal, Toronto and Winnipeg.

Armstrong's Ⓐ Product

Armstrong's and Nonpareil Insulating Brick

High Temperature Insulation for Industrial Furnaces

Metallurgical Engineers To Co-operate in Programs

ACTIVITIES of the American Institute of Mining and Metallurgical Engineers will be confined to two days, Oct. 5 and 6, with the Institute of Metals and Iron and Steel divisions participating. Technical sessions begin on Wednesday afternoon Oct. 5 with the divisions holding separate meetings in Hotel Statler.

A dinner in the evening will be attended jointly with Dr. Zay Jeffries, consulting engineer, Cleveland, as the speaker. Dr. Jeffries will present a nontechnical address on the subject of "Tungsten."

C. H. Mathewson
Chairman, Institute of Metals Division, American Institute of Mining and Metallurgical Engineers

On Thursday morning, Oct. 6, the Institute of Metals will conduct a second session and both divisions will meet jointly in session in the afternoon. At the conclusion of this meeting at 4:00 p.m., both divisions will reconvene for the science lecture "New Vacuum Valves and Their Applications," by A. W. Hull, research laboratories, General Electric Co., Schenectady, N. Y.

Prof. C. H. Mathewson, Hammond Laboratory, Yale university, New Haven, Conn., is chairman of the Institute of Metals division, and F. N. Speller, director, department of metallurgy and research, National Tube Co., Pittsburgh, is chairman of the Iron and Steel division.

The detailed program for both divisions of the American Institute of Mining and Metallurgical Engineers is as follows:

Wednesday, Oct. 5

2:00 P. M.—HOTEL STATLER

Institute of Metals

"A Study of Segregate Structures in Copper-Tin and Silver-Zinc Alloys," by Dana Smith, bureau of metallurgical research, Carnegie Institute of Technology, Pittsburgh.
"Copper Embrittlement—II," by L. L. Wyman, General Electric Co., Schenectady, N. Y.
"Properties of Copper Deoxidized with Calcium," by Lyall Zickrick, General Electric Co. Schenectady N. Y.

2:00 P. M.—HOTEL STATLER

Iron and Steel Division

"Effects of Inclusion Streaks on the Tensile and Dynamic Properties of Wrought Iron and Similar Materials," by F. R. Hensel and T. F. Hengstenberg, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.
"Effect of Small Percentages of Chromium on the Quality of Cast Iron," by C. O. Burgess, Union Carbide & Carbon Research Laboratories Inc., Long Island City, N. Y.
"Analyses of Inclusions in High-Carbon-Tool Steels," by Haakon Styri, SKF Research Laboratories, Philadelphia.

6:30 P. M.—HOTEL STATLER

Joint dinner meeting of Institute of Metals and Iron and Steel Divisions.
"Tungsten," a nontechnical address by Dr. Zay Jeffries, consulting engineer, Cleveland.

Thursday, Oct. 6

9:00 A. M.—HOTEL STATLER

Institute of Metals

"Directional Properties in Cold Rolled and Annealed Commercial Bronze," by Arthur Phillips, associate professor of metallurgy, Yale university, New Haven, Conn., and C. H. Samans, Chase Brass & Copper Co., Waterbury, Conn.
"Ears on Cupronickel Cups," by W. H. Bassett and J. C. Bradley, American Brass Co., Waterbury, Conn.
"Some Effects of Internal Stress on Properties of Drawn Brass Tubes," by D. K. Crampton, Chase Brass & Copper Co., Waterbury, Conn.

12:30 P.M.—HOTEL STATLER

Executive committee luncheon, Iron and Steel division.
Executive committee luncheon, Institute of Metals.

2:00 P. M.—HOTEL STATLER

Joint Session of Institute of Metals and Iron and Steel Division on Theoretical Metallurgy

"The Copper Rich Alloys of the Copper-Nickel-Tin System," by John T. Eash, International Nickel Co., Bayonne, N. J., and Clair Upthegrove, University of Michigan, Ann Arbor, Mich.
"Intermediate Phases of the Iron-Tungsten System," by W. P. Sykes, Wire Works, General Electric Co., Cleveland, and Kent R. Van Horn, Aluminum Co. of America, Cleveland.

4:00 P. M.—HOTEL STATLER

Science Lecture

"New Vacuum Valves and Their Application," by Dr. A. W. Hull, research laboratory, General Electric Co., Schenectady, N. Y.

Automotive Group Plans Session

AS ITS participation in the National Metal congress program, the Production Activity division of the Society of Automotive Engineers will hold a session on Monday morning in Hotel Statler, at which three technical papers will me presented.

F. N. Speller
Chairman, Iron and Steel Division, American Institute of Mining and Metallurgical Engineers

A joint luncheon meeting of these two divisions of the Automotive Engineers and Mechanical Engineers has been arranged for Monday noon.

J. E. Padgett, assistant general manager, Spicer Mfg. Corp., Toledo, is chairman of the Production division of the Society of Automotive Engineers.

The detailed program is as follows:

Monday, Oct. 3

10:00 A.M.—HOTEL STATLER

"What Manufacturing Equipment Is Required To Meet the Automotive Designer's Needs," by L. F. Maurer, Pierce Arrow Motor Car Co., Buffalo, and Alex Taub, Chevrolet Motor Co., Lansing, Mich.
"Current Applications of Cemented Carbide Tooling," illustrated by film, by R. D. Prosser, Thomas Prosser & Son, New York.
"Special Zinc Alloys in Die Castings," illustrated by film, by C. R. Maxon,

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New Jersey Zinc Co., New York.

12:30 P.M.—HOTEL STATLER

Joint luncheon of Society of Automotive Engineers with American Society of Mechanical Engineers.

"Adjusting Equipment Policies To Meet Changing Conditions," by Kenneth H. Condit, editor, *American Machinist*, New York.

A.S.M.E. in Shop Practice Sessions

A ONE-DAY meeting of the Machine Shop Practice division of the American Society of Mechanical Engineers has been arranged, this to take place on Monday, Oct. 3. In the morning members will attend the

F. C. Spencer

Chairman, Machine Shop Practice Division, American Society of Mechanical Engineers

meeting of the Production Activity division of the Society of Automotive Engineers in Hotel Statler.

Following this session, members of the two societies will attend a luncheon.

The Machine Shop Practice division will conduct its own meetings in the afternoon and evening, both to be in Hotel Statler. Three papers will be read at each session, these dealing with metal cutting and machine tool design.

F. C. Spencer, assistant superintendent of manufacturing development, Western Electric Co., Kearny, N. J., is chairman of the Machine Shop Practice division of the American Society of Mechanical Engineers.

The program of the division follows:

Monday, Oct. 3

10:00 A.M.—HOTEL STATLER

Society of Automotive Engineers pro-

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THE CUSTOM-MADE WELDING WIRE—FOR EXACTING WELDERS

John Mordica
President, Wire Association

duction meeting.

12:30 P.M.—HOTEL STATLER

Joint luncheon of American Society of Mechanical Engineers and Society of Automotive Engineers.

"Adjusting Equipment Policies To Meet Changing Conditions," by Kenneth H. Condit, editor, *American Machinist*, New York.

2:30 P.M.—HOTEL STATLER

"Influence of Oil Compressibility on Speed Characteristics of Hydraulic High-Speed Presses," by Walter Ernst, Hydraulic Press Mfg. Co., Mt. Gilead, O.

"Torque Required to Tap Cast Iron Using National Coarse Thread Series and National Fine Thread Series Taps," by J. E. Miller, Alden, Iowa.

"Recent Trends in Machine Tool Design," by Guy Hubbard, Cleveland.

8:00 P.M.—HOTEL STATLER

"Technique of Size Control in Precision Grinding," by R. E. W. Harrison, formerly chief engineering director, Cincinnati Grinders Co., Cincinnati.

"Design of Products To Utilize Die Castings of Machined Parts," by L. H. Morin, Doehler Die Casting Co., New York.

"Materials for Modern Cutting Tools," by J. V. Emmons, metallurgist, Cleveland Twist Drill Co., Cleveland.

Forge Institute To Study Survey

CO-OPERATING actively for the first time in the National Metal congress program is the American Drop Forging institute. This organization has arranged its annual meeting to be held Oct. 4-5 with headquarters in Hotel Statler.

On the afternoon of the first day the institute convenes jointly with the American Society for Steel Treating in a session featuring four papers devoted to drop forging problems. Its own session is to be held on Wednesday morning and it will be open to all representatives of the drop forge industry.

At the latter session considerable time will be spent in discussing the survey of the industry just completed by the department of commerce. This survey was sponsored by the Drop Forging institute and it is the first time the industry has been able to assemble basic facts pertaining to production, sales, capacity and other phases of equal importance.

The president of the American Drop Forging institute is C. H. Smith, president, Steel Improvement & Forge Co., Cleveland.

The program for the institute has been arranged as follows:

Tuesday, Oct. 4

2:00 P.M.—174TH ARMORY

Joint Session with American Society for Steel Treating on Drop Forging

"Further Experiments on the Forgeability of Steel," by O. W. Ellis, Ontario Research Foundation, Toronto, Ont.

"Behavior of Steel in Sulphur-Containing Atmospheres at Forging Temperatures," by D. W. Murphy, University of Michigan, Ann Arbor, Mich.

"Heating Steel for Forging," by R. E. Waldron, Dominion Forge & Stamping Co., Walkerville, Ont., and N. L. Deuble, Republic Steel Corp., Massillon, O.

"Drop Forging Practice," by Adam Steever, Great Lakes Forge Co., Chicago.

7:00 P.M.—HOTEL STATLER

Meeting of board of directors.

Wednesday, Oct. 5

9:45 A.M.—HOTEL STATLER

"Industry's Challenge to Trade Associations," by C. H. Smith, president, American Drop Forging institute.

"Discussion of Survey Made by United States Department of Commerce," by J. B. Sehl, cost agent, American Drop Forge institute.

Wire Association Meets Four Days

ANOTHER newcomer into the National Metal Congress is the Wire association, an organization interested in the manufacture and treatment of ferrous and nonferrous wire. This will constitute the annual meeting of the association and its formal program will extend over four days, Oct. 4-7. Headquarters will be at Hotel Statler.

To promote wide discussions, with one exception only a single paper is scheduled for each of the six technical sessions, beginning Tuesday morning and continuing two each day through Thursday. The Tuesday morning program will deal with material handling in the wire mill, the afternoon session to plant management and cost accounting; Wednesday morning to copper rod rolling, wire drawing and annealing and Wednesday afternoon to manufacture of rubber-covered wire; Thursday morning to patenting and Thursday afternoon to stainless steel.

All morning sessions will be held in Hotel Statler and all afternoon sessions at the 174th Regiment Armory.

The concluding session scheduled for Friday morning will be devoted largely to conduct of official business and it will be presided over by John Mordica, superintendent, rod and wire works, Bethlehem Steel Co., Sparrows Point, Md., who is president of the association.

The detailed program has been announced as follows:

Tuesday, Oct. 4

9:30 A. M.—HOTEL STATLER

"Material Handling in Wire Mills," by L. D. Granger, Wickwire Spencer Steel Co., New York.

2:00 P.M.—174TH ARMORY

"Plant Management," by John C. Callaghan, Steel Co. of Canada, Hamilton, Ont.

"Cost Accounting," by R. F. Cohn, Reynolds Wire Co., Dixon, Ill.

Wednesday, Oct. 5

9:30 A. M.—HOTEL STATLER

Nonferrous Session

"Copper Rod Rolling, Wire Drawing and Annealing," by John R. McKean, American Electrical Works, Phillipsdale, R. I.

2:00 P. M.—174TH ARMORY

Rubber-Covered Wire," by E. G.

"Process Control in the Manufacture of Sturdevant, U. S. Rubber Co., Bristol, R. I.

Thursday, Oct. 6

9:30 A. M.—HOTEL STATLER

"Patenting," by R. B. Whyte, Macwhyte Co., Kenosha, Wis.

"Stainless Steel," by Earl C. Smith, Republic Steel Corp., Youngstown, O.

Friday, Oct. 7

10:00 A.M.—HOTEL STATLER

Annual meeting of Wire association.

Discussion of Wire Industry Preparedness Plan by representatives of War and Navy departments, Washington.

C. H. Smith
President, American Drop Forging Institute

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Exhibitors in National Metal Exposition

174th Regiment Armory, Buffalo, Oct. 3-7

Exposition Hours

Monday .....**12:00 to 10:00 p.m.**
Tuesday .....**12:00 to 10:00 p.m.**
Wednesday .....**12:00 to 10:00 p.m.**
Thursday .....**12:00 to 6:00 p.m.**
Friday .....**12:00 to 10:00 p.m.**

A

Abrasive Industry, Cleveland D-12
Air Reduction Sales Co., New York G-7, G-9
Ajax Electric Co. Inc., Philadelphia C-1
Ajax Electrothermic Corp., Trenton, N. J. C-1
American Brass Co., Waterbury, Conn. D-16
American Car & Foundry Co., New York G-3
American Cyanamid & Chemical Corp., New York C-21
American Electric Furnace Co., Boston .....Gas Section
American Gas Association, New York .....Gas Section
American Gas Furnace Co., Elizabeth, N. J. .....Gas Section
American Lubricants Inc., Buffalo F-15
American Steel & Wire Co., Chicago E-6
Armstrong Cork & Insulation Co., Lancaster, Pa. E-30
Aurora Metal Co., Aurora, Ill. C-31
Automotive Abstracts, Cleveland D-12

B

Banner Welding & Supply Co., Buffalo G-17
Bausch & Lomb Optical Co., Rochester, N. Y. E-17
Bell & Gossett Co., Chicago G-12
Bethlehem Steel Co., Bethlehem, Pa. D-18
Brace-Mueller-Huntley Inc., Buffalo C-19
Buffalo, Niagara & Eastern Power Corp., Buffalo F-5
Burke Electric Co., Erie, Pa. G-17

C

Carboloy Co. Inc., Detroit F-25
Carborundum Co., Niagara Falls, N. Y. D-29, D-31
Case Hardening Service Co., Cleveland G-12
Champion Rivet Co., Cleveland G-19
Chicago Steel Foundry Co., Chicago B-6
Cling Surface Co., Buffalo E-12
Columbia Tool Steel Co., Chicago Heights, Ill. C-7

D

Daily Metal Trade, Cleveland D-12
Dearborn Chemical Co., Chicago E-35
Diamond Die Co. of America, New York F-29
Dow Chemical Co., Midland, Mich. F-7

E

Eisler Electric Corp., Newark, N. J. G-23
Electro Metallurgical Co., New York E-1, D-6, E-7
Electro Refractories & Alloys Corp., Buffalo F-20
Erie Malleable Iron Co., Erie, Pa. E-21

F

Falls Electric Furnace Corp., Buffalo E-10
Firth-Sterling Steel Co., McKeesport, Pa. D-23

G

Gas Machinery Co., Cleveland .....Gas Section
Gathmann Engineering Co., Baltimore C-22
General Alloys Co., Boston D-1
General Electric Co., Schenectady, N. Y. B-22
Globar Corp., Niagara Falls, N. Y. D-29, D-31
Grasselli Chemical Co., Cleveland D-26

H

Harnischfeger Corp., Milwaukee F-12
Haynes Stellite Co., Kokomo, Ind. E-1, D-6, E-7
Heppenstall Co., Pittsburgh D-22
Hevi Duty Electric Co., Milwaukee G-10
Hollup Corp., Chicago C-2
Hones, Charles A., Inc., Baldwin, N. Y. .....Gas Section
Houghton, E. F., & Co., Philadelphia D-17

I

Illinois Steel Co., Chicago B-10
Illinois Testing Laboratories, Chicago A-21
International Nickel Co. Inc., New York E-29

J

Jewell Steel & Malleable Co., Buffalo B-4
Jones & Laughlin Steel Corp., Pittsburgh E-18

K

Kelley, J. W., Co., Cleveland G-21
Kelley-Koett Mfg. Co., Covington, Ky. B-33
Kemp, C. M., Mfg. Co., Baltimore .....Gas Section

L

Lebanon Steel Foundry, Lebanon, Pa. E-15
Leitz, E., Inc., New York C-6
Lincoln Electric Co., Cleveland F-1
Linde Air Products Co., New York E-1, D-6, E-7
Ludlum Steel Co., Watervliet, N. Y. C-19

M

Machine Design, Cleveland D-12
Magnetic Analysis Corp., Long Island City, N. Y. B-12
Manhattan Rubber Mfg. Division, Passaic, N. J. E-4
Marburg Bros., New York E-26
Metal & Thermit Corp., New York A-25
Metallizing Co., Los Angeles A-27
Minneapolis-Honeywell Regulator Co., Minneapolis E-22
Molybdenum Corp. of America, Pittsburgh D-20

N

New Jersey Zinc Sales Co. Inc., New York D-10

O

Olsen, Tinius, Testing Machine Co., Philadelphia E-23
Otis Elevator Co., Buffalo B-27

P

Pels, Henry, & Co., New York G-25

R

Railway Locomotive Co., Chicago B-18
Republic Steel Corp., Youngstown, O. C-10
Rinkle Krinkle Paper Co., Boston G-28
Ripley Co., Cleveland B-35
Roebling's, John A., Sons Co., Trenton, N. J. G-1
Roessler & Hasslacher Chemical Co., Niagara Falls, N. Y. C-33

S

Selas Co., Philadelphia .....Gas Section
Spencer Turbine Co., Hartford, Conn. A-18
Stark Tool Co., Waltham, Mass. A-19
STEEL, Cleveland D-12
Struthers-Wells Co., Warren, Pa. F-17
Stuart, D. A., & Co., Chicago C-16
Superior Steel Corp., Pittsburgh E-16
Surface Combustion Corp., Toledo, O. .....Gas Section

T

Terkelsen Machine Co., Boston G-28
The Foundry, Cleveland D-12
Thomas Steel Co., Warren, O. C-20
Timken Steel & Tube Co., Canton, O. D-7

U

Union Carbide & Carbon Corp., New York E-1, D-6, E-7
Union Drawn Steel Co., Massillon, O. C-23
U S L Battery Corp., Niagara Falls, N. Y. C-4

V

Victor Saw Works Inc., Middletown, N. Y. B-30

W

Wheelock, Lovejoy & Co. Inc., Cambridge, Mass. C-18
Wickwire Spencer Steel Co., New York D-21
Williams, J. H., & Co., Buffalo C-15, C-17

ADVERTISING PAGES REMOVED

Construction, Enterprise

(*Continued from Page 57*)

Windsor, Ont., for production of its rings for the Canadian and British trade.

Michigan

BESSEMER, MICH.—City, L. F. Mueller clerk, is having plans made for a municipal electric light and power plant to cost about $140,000.

DETROIT—Rex Plating Works Inc. has been incorporated with $10,000 capital to do grinding and abrasive work, by George Timmerman, 2543 Grand River avenue.

FLINT, MICH.—Automatic Store Appliance Corp., 612 Genessee Bank building, has been incorporated with $100,000 capital and 53,000 shares no par value to manufacture store fixtures and fittings, by Arthur C. Koepke, 313 Paterson building, Flint.

Illinois

CHICAGO—Casthalter Pipe & Supply Co. Inc., 2649 Clybourn avenue, has been incorporated with $10,000 capital to manufacture pipe and tubes, by Reuben Freeman, 11 South LaSalle street

CHICAGO—Hurley Machine Co., Edward N. Hurley president, manufacturer of electric washing machines, is increasing operations to keep pace with steadily increasing sales, the highest sales in 16 months having been reached.

CHICAGO—Indestro Mfg. Corp., 2649 North Kildare avenue, has been incorporated with 1000 shares no par value to manufacture tools and household appliances, by Warren Horton, 2300 Board of Trade building, Chicago.

CHICAGO—Columbia Metal Co., 1016 South California avenue, has been incorporated with $20,000 capital to deal in scrap iron and steel and other metals, by Isadore Isenberg, 127 North Dearborn street.

CHICAGO — Hasty-Johnson Corp., manufacturer of cementing presses, grinding machines for automobile work and electric shoe-shining machines, has leased a plant at 2036 Elston avenue and has moved its business there from Elgin, Ill.

CHICAGO—Accessory Parts Service Inc., 5652 West Huron street, has been incorporated with $2200 capital to manufacture mechanical, electrical, and automotive devices, by Kraft & Erskine, 1923 Harris Trust building, 111 West Monroe street.

ROCK ISLAND, ILL.—Collier Construction Co., Cleveland has been awarded contract for lock-operating machinery and equipment for Mississippi lock, Dam 15, at Rock Island, at $165,-312.

ROCK ISLAND, ILL.—Gellerman Mfg. Co. is having plans drawn by Cervin & Stuhr, Rock Island, for a $35,000 foundry to be built a adjacent to the plant at 1700 First street. Foundry operations in temporary quarters will be

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brought to the main plant. Foundry equipment will total about $10,000.

Southern States

MOBILE, ALA.—Bids will be opened Oct. 4 by the state highway department, Montgomery, Ala., for a 150-foot steel swing span over Three Mile creek, city, state and Mobile county sharing cost of about $50,000.

WILMINGTON, DEL.—North American Engineering Inc. has been incorporated with $250,000 capital to manufacture refrigerating devices, by Corporation Fiscal Co., Wilmington, Del.

WASHINGTON—Bureau of supplies and accounts, navy department, will take bids until Oct. 4 on schedule 8748 for one motor-driven boring, drilling and milling machine for delivery at Brooklyn, N. Y.

MIAMI, FLA.—City commissioners, R. B. Gautier mayor, plans to extend the waterworks system, including installation of a diesel engine and other new equipment. Cost is estimated at $500,000.

AUGUSTA, GA.—Lombard Iron Works & Supply Co., H. A. Thorndike sales manager, is starting production on a completely new line of hydraulic machinery, including power pumps 250 to 18,000 gallons capacity centrifugal pumps 1 to 6 inches, automatic electric water systems for rural use and a line of gasoline engines of 1 to 10 horsepower for use with the latter.

MEMPHIS, TENN.—Federal engineers at Memphis are advertising for about 19,000,000 cubic yards of earth work in Mississippi flood control projects. Levee enlargement will cost $6,500,000 and employ over 2000 men.

HUNTINGTON, W. VA.—U. S. Engineer's office will take bids until Sept. 30 for powerhouse machinery, lock illumination, signal equipment and towhaulage units at Marmet lock, West Virginia.

HUNTINGTON, W. VA.—United States Engineers announce that identical bids of $135,200 have been submitted by Vang Construction Co., Pittsburgh, and R. C. Huffman Construction Co., Cleveland, for removal of 520,000 cubic yards of material in the Ohio river at dams 22 and 29.

Arkansas

PARAGOULD, ARK.—An election will be held Oct. 24 on $100,000 bonds for a municipal electric light and power plant, its equipment and a distribution system. W. A. Fuller Co., 2916 Shenandoah avenue, St. Louis, is engineer. W. C. Middleton is mayor.

Oklahoma

IDABEL, OKLA.—An election will be held soon on $100,000 bonds for a power plant, including two 180-horsepower diesel engines, generators, switchboard and complete distributing system. Russell & Axon, 229 Roosevelt building, St. Louis, are engineers.

Texas

CORPUS CHRISTI, TEX.—Channel Machine Shop has been incorporated with $5000 capital by James E. Weatherford Jr.

DALLAS, TEX.—Magnolia Petroleum Co. has been given permit by Texas railroad commission to operate a carbon black plant in Wheeler county, Texas, with daily capacity of 4,000,000 feet of gas.

Wisconsin

CASSVILLE, WIS.—Plans are being made for a municipal sewerage plant to cost about $40,000. Plans have been drawn by W. G. Kirchhoffer, consulting engineer, 22 North Carroll street, Madison, Wis.

GREEN BAY, WIS.—Western Lime & Cement Co., 110 East Wisconsin avenue, Milwaukee, has let contracts for construction of a substantial addition to its high-calcium lime producing plant at James street and Fox river, here.

Minnesota

ELK RIVER, MINN.—City plans to build a power plant to cost about $80,000. R. W. Richardson, New York Life building, St. Paul, Minn., is engineer.

South Dakota

CANTON, SO. DAK.—City plans to build an electric light and power plant and distributing system to cost $115,000. Buell & Winter, 503 Insurance building, Sioux City, Iowa, are engineers.

Iowa

ATLANTIC, IOWA—Burns & McDonnell Engineering Co., 406 Interstate building, Kansas City, Mo., is drawing plans for improvements to the municipal waterworks and electric light and power plant.

Nebraska

RALSTON, NEBR.—The city will build a 40 x 60-foot municipal electric light and power plant and distributing system, including two 360-horsepower diesel engines, generators, exciters and switchboard, to cost about $90,000. C. V. Barnhill, 420 Federal Trust building, Lincoln, Nebr., is engineer.

Colorado

FORT COLLINS, COLO.—An election will be held soon on $745,000 bonds for a municipal electric light and power plant. Burgess C. Coy is city engineer.

Idaho

SAND POINT, IDAHO—Commissioners of Bonner county will open bids Oct. 10 for furnishing 112½ tons of galvanized hardware for a wooden bridge to cross the Pend Orielle river here.

Pacific Coast

BARSTOW, CALIF.—State of California, C. H. Purcell engineer, Public Works building, Sacramento, Calif., plans a steel bridge over Mojave river, north of Harvey House, in San Bernardino county, to cost about $176,000.

GLENDALE, CALIF. — William L. Heyn is building a machine shop 25 x 95 feet at 735 South San Fernando road.

LOS ANGELES—M. H. Wiley, 2636 Humboldt street, is building an addition to his machine shop.

LOS ANGELES—Southern California Gas Co., 1700 Santa Fe avenue, is planning a garage and shop building 110 x 295 feet at 2417 East Eleventh street, to cost about $80,000.

LOS ANGELES—Los Angeles county is completing specifications for two 500-horsepower water-tube boilers, with burners, breeching, stack, pipe, foundation and all appurtenances. Mechanical department, Los Angeles, is engineer.

PORTLAND, OREG.—City officials are considering a proposal by private capitalists for construction of a bus and stage terminal to cost $200,000.

PORTLAND, OREG.—City is considering plans for a municipal power plant. Carey & Harlan, Portland, are engineers.

NEWPORT, WASH.—Special election will be held Oct. 10 on proposal of city to buy local waterworks system from Foshay interests. Estimate is that $50,000 will be needed for purchase and improvements.

VANCOUVER, WASH.—State highway department has bought a site and plans erection of a warehouse and machine shop to cost $60,000 for handling highway equipment.

WINTHROP, WASH.—Ore bunkers with capacity of 200 cars are being built at the Gold Hill mines, near here. Smelting at the Azurite mines has been resumed.

YAKIMA, WASH.—City officials are considering purchase and installation of a fire alarm system.

Dominion of Canada

CALGARY, ALTA.—Canadian Western Natural Gas, Light, Heat & Power Co. Ltd., Calgary, Alta., plans expenditure of $500,000 for improvements by itself and associated companies.

VANCOUVER, B. C.—Pacific Mills Ltd., Standard Bank building, will erect a 2-story addition to its plant at the foot of Raymur avenue, to cost $27,000. It is in the market for equipment to manufacture solid fiber containers, to the extent of $100,000. W. G. Swan, Birks building, is architect.

WINNIPEG, MAN. — Perth Dye Works Ltd., 482 Portage avenue, will take bids soon on boilers, air cooling system, cleaning and finishing equipment for a new dry cleaning plant.

E. Prain, Confederation Life building, is architect.

NORTH BAY, ONT. — Termagami Timber Co. will rebuild its burned lumber mill, loss on which was $85,000. Equipment was a total loss.

MONTREAL EAST, QUE.—Shell Oil Co. of Canada Ltd., 21 Dundas square, Toronto, Ont., will buy equipment for a garage and machine shop here for which erection contracts have been let. It is part of a $2,000,000 plant.

MELFORT, SASK.—Producers Milling Co., Regina, Sask., plans to build a mill and elevator here, to cost $200,000. J. W. Ford, Regina, is president. Financing is being arranged.

New Trade Publications

REFRACTORY CEMENT — Charles Taylor Sons Co., Cincinnati, has issued a booklet on its new high-temperature cement for the information of users of refractories.

TRUCK TRACTORS—Clark Tructractor Co., Battle Creek, Mich., has issued a miniature catalog covering its line of trucks and other devices for moving materials. Though small, the catalog is unusually complete.

WIRE ROPE—Advantages of its Flex-Set wire rope are set forth in a broadside by Broderick & Bascom Rope Co., St. Louis. Illustrations graphically show the features of rope manufactured under this plan, tending to reduce wear.

STEEL—Youngstown Sheet & Tube Co., Youngstown, O., has issued a booklet to acquaint the trade with the breadth of its line of products. It lists all products from raw materials to the most finished, with range of sizes and qualities.

NICKEL-CLAD STEEL — Lukens Steel Co., Coatesville, Pa., in a current bulletin tells what its nickel-clad steel is doing for industry. Illustrations show uses to which it is being put and descriptive matter indicates a wide range of purposes to which it is suited.

SPEED REDUCERS — Foote Bros. Gear & Machine Co., 215 North Curtis street, Chicago, is distributing its revised catalog, No. 302, on worm gear speed reducers. It contains engineering information and data, with new ratios and ratings and revised dimensions.

ELECTRIC HOIST — Philadelphia Gear Works, Philadelphia, in a current bulletin describes its electric hoist, showing by illustration the features of its construction which add to its usefulness and economy of operation. Tables of capacities and ratings and of clearance dimensions are given.

ELECTRIC MOTORS—A table of motor characteristics has been compiled for distribution by the Triumph Electric Corp., Cincinnati. It is useful in checking performance of old installations for the purpose of reducing connected load and raising power and load factor.

WIRE CLOTH—Newark Wire Cloth Co., Newark, N. J., is distributing its new general catalog, No. 32. This is more of a handbook than catalog, containing a glossary of wire terms and technical information on various subjects, in addition to listing of the company's various products.

ENGINEERING ACHIEVEMENTS—No. 9 of its series on high lights in its career has been issued by the Wellman Engineering Co., Cleveland. It is devoted to the company's development of coke oven machinery and of revolving car dumpers. Each of these contributions to mechanical handling of materials resulted in great economy.

TESTING MACHINES—Testing Machines Inc., 314 Broadway, New York, American representative of Louis Schopper, Leipzig, Germany, is distributing catalog No. 390 of that firm, covering its line of metal testing machinery, especially for use in testing wires, small diameter rods, sheets and other small and thin sections.

HIGH-PRESSURE PUMPS—Baldwin-Southwark Corp., Philadelphia, has issued bulletin No. 36 on its line of high-pressure hydraulic pumps, horizontal and vertical. Detailed descriptions, with tables of dimensions and capacities, are included. A new hydro-gas accumulator hydraulic power system is also described.

LIFTING MAGNETS—Electric Controller & Mfg. Co., Cleveland, in bulletin No. 900 describes its line of lifting magnets. A number of changes have been made. Dardelet self-locking through bolts are used for holding pole shoes; an outer bottom plate has been added of heavily ribbed construction; lifting capacities are given on the new size magnet, 39 inches in diameter; complete information on improved automatic discharge magnet controller; illustrations are given of the new cable connectors now used on all sizes of magnets.

STAINLESS STEEL SHEETS—American Sheet & Tin Plate Co., Pittsburgh, has issued a booklet on its stainless steel sheets and light plates. It covers magnetic and non-magnetic sheets of chromium alloy and chromium nickel composition. After treating of general considerations the booklet describes each type of sheet and indicates its properties and uses. Methods of soldering and welding are described.

ROLLER BEARINGS—Hyatt Roller Bearing Co., Newark, N. J., in bulletin No. 100 presents applications of its bearings. The four sections of the bulletin cover wound roller-type bearings; solid roller-type bearings; single-row radial bearings; lubrication data. Dimension and load rating tables are included and mounting drawings for each type. Several pages are devoted to elements of bearing design, selection, load computation and correct assembly.

POWER AND PROCESS EQUIPMENT—Babcock & Wilcox Co., 85 Liberty street, New York, is distributing a catalog of its products for power, industrial and process plants. It describes design and construction and gives operating characteristics. Discussion is included on advantages of mercury vapor, diphenyl and diphenyloxide as heat transfer media. A bulletin by the same company covers four to six per cent chromium steel tubes and pipe for refinery and other service.

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Coke Pushers, Levelers and Door Lifters
Coal Pier Equipment
Rolling Mill Machinery
Cement Plant Machinery
Dock Handling Equipment
Coke Oven Equipment

275 of 100 Tons Capacity and over

LADLE AND STANDARD CRANES

59	100 tons
2	WORM DRIVEN Ladle, 100 tons
2	115 tons
6	WORM DRIVEN Ladle, 125 tons
45	125 tons
30	150 tons
3	WORM DRIVEN Ladle, 150 tons
6	WORM DRIVEN Ladle, 160 tons
2	WORM DRIVEN Ladle, 165 tons
7	WORM DRIVEN Ladle, 175 tons
27	175 tons
3	WORM DRIVEN Ladle, 200 tons
4	200 tons
5	225 tons
1	250 tons
3	WORM DRIVEN Ladle, 250 tons
3	WORM DRIVEN Ladle, 275 tons
1	275 tons
1	300 tons
3	430 tons

STRIPPING CRANES

8	100 tons
1	125 tons
22	150 tons
19	200 tons
1	Single Ram, 320 tons

COMBINATION CHARGERS AND STRIPPERS

3	100 tons
1	125 tons
3	150 tons
4	200 tons

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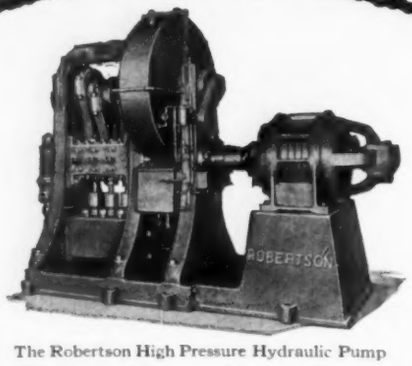

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